Operator and Service

machine manual

MP MASTER
MA32961

NOTICE

The use of this or any industrial system may involve hazards such as hot surfaces, sharp objects, or nip points, as well as danger from exposure to electricity, UV or laser light, or hazardous chemicals. This Operator/Service manual is provided to assist you in the safe and efficient use of your system. Read and follow the Cautions, Warnings, and Instructions carefully for maximum safety, and to obtain the best use of your system and supplies.

A Material Safety Data Sheet is provided for each hazardous chemical sold by MARKEM. These sheets include information about composition, properties, usage, and hazards.

All materials, whether considered hazardous or not, should be used in accordance with principles of good manufacturing practice.

If you have questions or comments
contact:

MARKEM®
1-800-462-7536

KNOW HOW TO USE THIS SYSTEM SAFELY
BEFORE YOU START TO USE IT.

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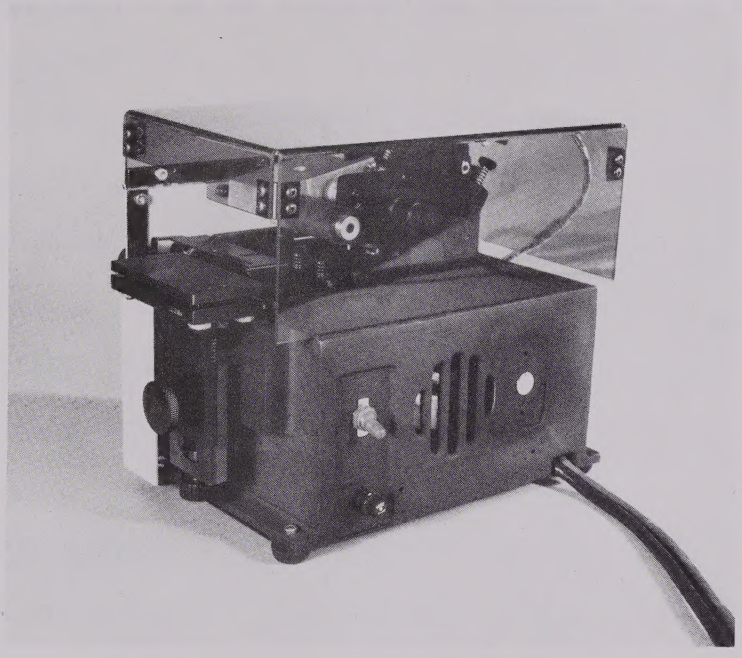

MODEL 527

Serial Number:_____ Date Installed:_____

Customer Account Number:_____

PLEASE NOTE: When writing or telephoning Markem, always give your machine model number, machine serial number, and customer account number.

This instruction manual outlines procedures to operate and maintain your Markem machine. Follow these procedures carefully to get efficient operation of the machine and to prevent equipment damage.

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REFERENCE LIST
MODEL 527

The information on your machine packing slips can be written below for reference.

Printing Elements:

Ink:

Cleaner:

Order Supply Items From:

Markem Representative:

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1. GENERAL DESCRIPTION:

The Model 527 is an electrically operated, bench mounted, offset printing machine with an imprint area of 7/8" x 2" (22.2 x 50.8 mm). Machine cycling is controlled by the operator actuating a footswitch. The elevating work table allows for printing directly onto numerous types of products with a thickness up to 1 3/8" (34.92mm).

POLY-MARK plates, photopolymer plates, rubber plates, or a loose type/masterplate combination can all be used for printing elements on this machine. Once installed, the printing elements are inked twice with each machine cycle, insuring complete and even inking for the highest quality prints.

Maintenance of this machine consists normally of a daily cleaning with Markem cleaner to remove all ink from the printing elements, offset roller, ink roller and ink plate.

2. GLOSSARY OF TERMS:

CYCLE RATE	A term used by MARKEM to describe machine operating speed. Usually expressed in intervals of one minute. "Production rate" or "speed" differ from cycle rate as they vary with each application and are influenced by operator skill.
GIBS	The parts which hold another part or product in a secure position.
IMPRINT AREA	The area to be printed.
JOG	To run the machine in quick start, stop intervals. The same as "inching" the machine.
MACHINE CYCLE	The complete sequence of events the machine follows to produce each printed image.
OHM METER	An electrical measuring device or a function of a multimeter.
POWER SUPPLY CORD	The source of electricity to the machine, with requirements stated.
PRINT HEAD	The portion of the machine concerned directly with transferring an ink supply to a recognizable image.
PRINT PRESSURE	The amount of force needed for the image of the printing element to be made on the printed surface.
PRINTING ELEMENTS	The material which originates the image being printed. Type, rubber plates, gravure rollers, engravings, etchings are all printing elements.
TYPE HOLDER	Holds the type. Fits into the type chase.
VOLTMETER	An electrical measuring device or a function of a multimeter.

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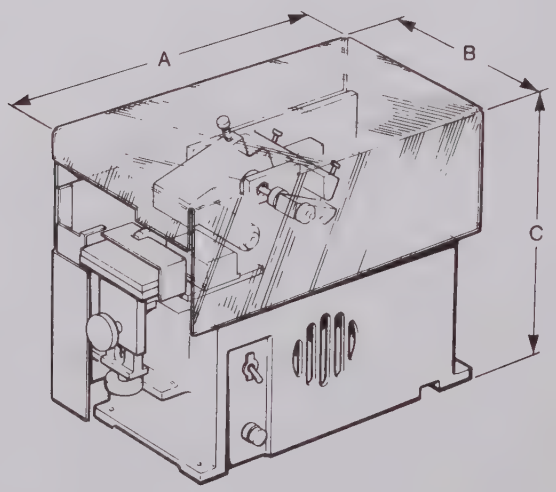
3. SPECIFICATIONS:

Imprint area:	1" x 2" (25.4 x 50.8 mm)
Maximum product thickness:	1 3/8" (34.9 mm)
Printing elements:	Photopolymer plates POLY-MARK plates Rubber plates Metal type
Printing medium:	Markem Specialty inks
Cycle rate:	Up to 3000 cycles/hour (50/min @ 60 Hz; 42/min @ 50Hz)
Electrical:	115V/50-60Hz/1Ph, 1.2 Amps 230V/50-60Hz/1Ph, 0.6 Amps
Mounting:	Bench
Weight (approximate):	35 lbs (15.9 kg)

4: DIMENSIONAL DRAWING:



	A	B	C
Inches	12.625	7.375	10.750
Millimeters	321	187	273

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5. INSTALLATION:

5.1 Put the machine on a level bench or table where there is access to the front and both sides.

5.2 Connect the power supply cord to an electrical source that matches the specifications written on the tag attached to the cord.

5.3 Install the ink roller if not already installed.

5.4 Install a printing element.

5.5 Jog the machine as necessary until the ink roller is directly over the printing element.

5.6 Adjust the position of the ink roller so it just makes contact with the surface of the printing element.

5.7 Put ink onto the ink plate. Make all necessary adjustments to the print head to obtain a quality imprint on the offset roller. (See Operator Instructions for inking adjustments.)

6. INSTALLATION CHECK LIST:

____ Machine is on a stable bench or table and is level.

____ Electrical power connected.

____ All inking adjustments made and good imprints being produced.

7. MACHINE PACKAGING FOR RESHIPMENT:

7.1 Remove the printing elements from the machine and clean with Markem cleaner. Wrap all printing elements in protective material in such a way as to protect the printing surfaces.

7.2 Adjust the position of the ink roller so it is not making contact with the ink plate. Clean all machine parts with Markem cleaner to remove all traces of ink.

7.3 Place the machine, footswitch and printing elements in a heavy corrigated carton. Cushion the machine in the carton with appropriate filler material. Seal the carton securely.

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1. OPERATION OF THE CONTROLS:

NOTE: The following paragraphs describe the functions of the control switches. Do not operate these switches until instructed to in the procedures under "Preparation of the machine to print", Paragraph 2 that follows.

1.1 Toggle switch (1, photo 1) is the main electrical switch. Put this switch in the "ON" position to energize the machine.

1.2 Footswitch (2 ,photo 2) controls the cycling of the machine. Press the footswitch to start the motor running and thus the cycle. Release the footswitch and the machine will automatically stop at the end of the cycle. Hold the footswitch pressed for continuous cycling.

1.3 Cover interlock switch (3, photo 3) prevents the machine from running unless the cover is closed.

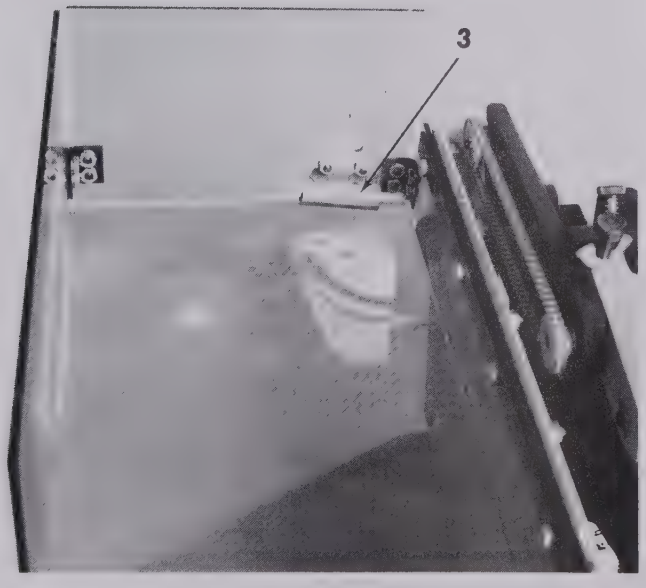


PHOTO 3

PHOTO 1

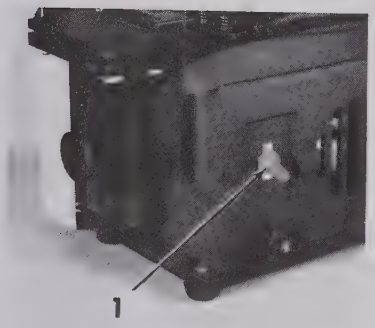
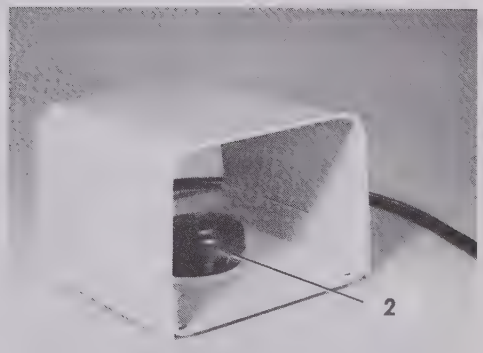


PHOTO 2



1.4 While preparing the machine to print, it will be necessary to "jog" the machine to put the print head in different positions. Do the following to "jog" the machine:

NOTE: The cover must be closed.

a) Put the toggle switch (1, photo 1)in the "OFF" position.

b) Hold the footswitch (2, photo 2) pressed.

c) Quickly move the toggle switch to the "ON" and then "OFF" positions. Repeat this until the print head has moved to the desired position.

d) Release the footswitch and put the toggle switch in the "RUN" position to make the machine return to its normal stop position.

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2. PREPARATION OF THE MACHINE TO PRINT:

NOTE: Paragraphs 2.1 through 2.3 describe the installation of the three different styles of printing elements used on this machine. Go directly to the paragraph that describes the style of printing element you are using:

2.1 Photopolymer Plates

2.2 POLY-MARK or Rubber Plates

2.3 Slotted Masterplate and Loose Metal Type

2.1 PRINTING ELEMENTS, INSTALLATION OF ETCHED PHOTOPOLYMER PLATES:

2.1.1 Put the photopolymer plate (4, photo 4) on the typeholder (5, photo 4) with the plates edges aligned with the edges of the typeholder. Lips on the edge of the typeholder keep the plate aligned. Magnets hold the plate on the typeholder.

2.1.2 Slide the typeholder under the ways (6, photo 5) of the print head. Push in until the typeholder makes contact with the stop (7, photo 5).

2.1.3 The legend on the printing element should now be centered within the width of the offset roller. If it isn't, loosen lock nut (8, photo 5) and turn stop screw (7, photo 5) to change the left to right position of the printing element. Tighten lock nut (8, photo 5) when final adjustment is made.

2.2 PRINTING ELEMENTS, INSTALLATION OF POLY-MARK OR RUBBER PLATES:

2.2.1 Put doubleback tape on the surface (9, photo 4) of the backing block.

2.2.2 Press the POLY-MARK or rubber plate onto the doubleback tape. Keep the plate legend aligned as needed to place the imprint appropriately on the product being printed.

2.2.3 Slide the backing block under the ways (6, photo 5) of the print head. Push in until the backing block makes contact with the stop (7, photo 5).

2.2.4 The legend on the printing element should now be centered within the width of the offset roller. If it isn't, loosen lock nut (8, photo 5) and turn stop screw (7, photo 5) to change the left to right position of the printing element. Tighten lock nut (8, photo 5) when final adjustment is made.

2.3 PRINTING ELEMENTS, INSTALLATION OF SLOTTED MASTERPLATE WITH METAL TYPE:

2.3.1 Place the metal type characters into the slot of the masterplate. Be sure the characters are aligned in the same direction. See diagram 1. The entire slot must be filled with type characters or else excess space taken up with spacers. Spacers look like regular type characters only without a character engraved on the end.

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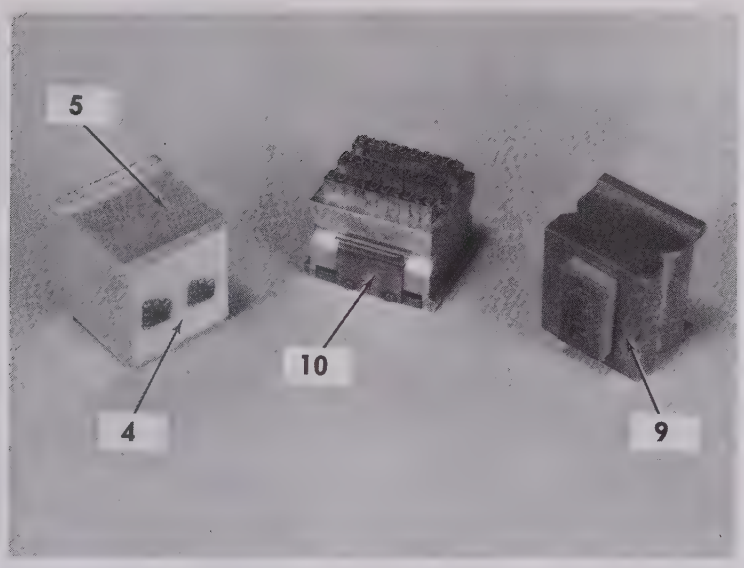
PHOTO 4



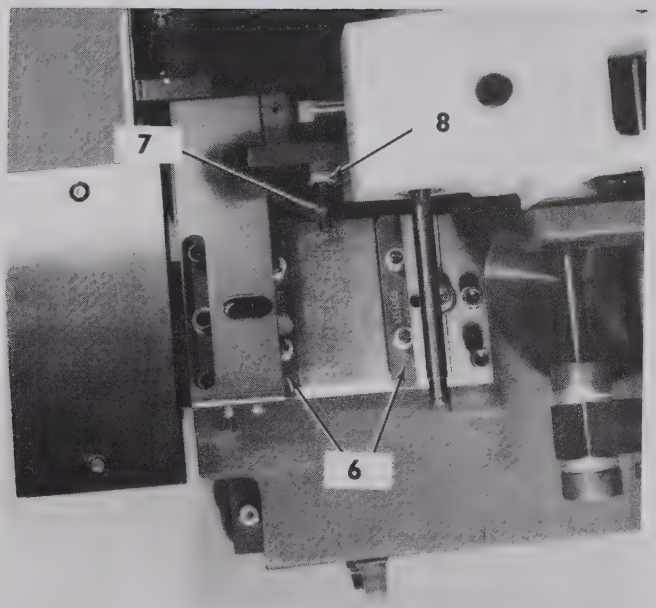
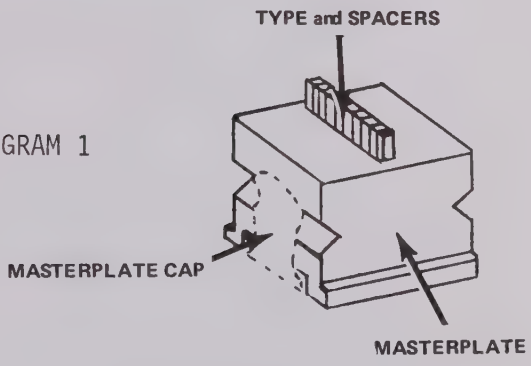


PHOTO 5

DIAGRAM 1



2.3.2 Push the masterplate cap (10, photo 4) onto the masterplate after all type has been inserted into the slot(s).

2.3.3 Slide the masterplate under the ways (6, photo 5) of the print head. Push in until the masterplate makes contact with the stop (7, photo 5).

2.3.4 The legend on the printing element should now be centered within the width of the offset roller. If it isn't, loosen lock nut (8, photo 5) and turn stop screw (7, photo 5) to change the left to right position of the printing element. Tighten lock nut (8, photo 5) when final adjustment is made.

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2.4 INK ROLLER INSTALLATION:

Go to Paragraph 2.5 if the ink roller (11, photo 6) is already installed.

2.4.1 Jog the machine until slot (12, photo 7) is located between the ink plate (13, photo 7) and the printing element. (See Paragraph 1.4, Section 2 for jogging instructions.)

2.4.2 Insert the end of the ink roller into hole (14, photo 7).

2.4.3 Push in on disc (15, photo 6), see diagram 2, until the ink roller arbor slides up into slot (12, photo 7).

2.4.4 Release the disc. Both bearings on the two ends of the ink roller will now be seated in holes to secure the ink roller in place.

2.4.5 Run the machine until its cycle is completed (print head fully back). Put the toggle switch in the "OFF" position.

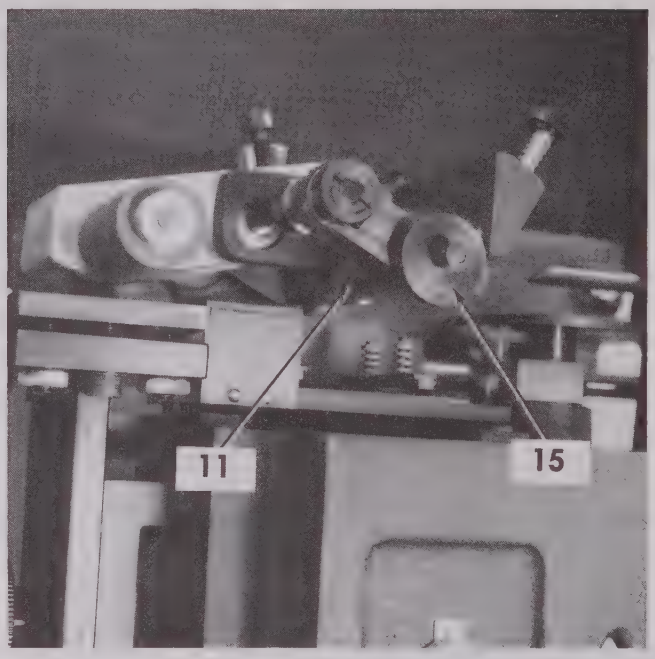

PHOTO 6

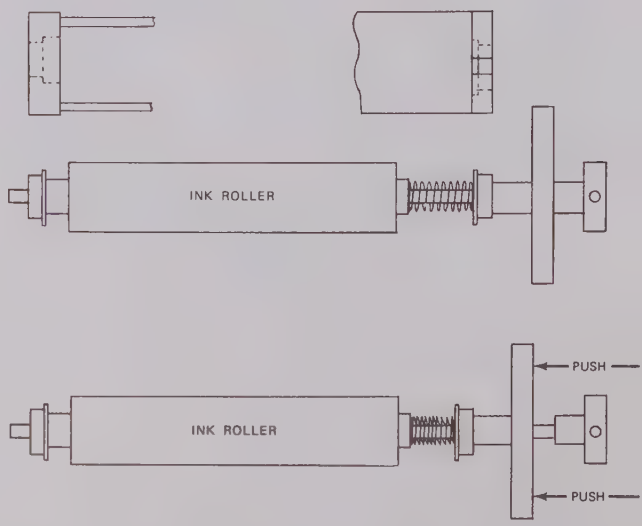

DIAGRAM 2

2.5 PUTTING INK INTO THE PRINT HEAD; PRINT HEAD INKING ADJUSTMENTS:

2.5.1 Jog the machine until the ink roller (11, photo 6) is directly centered over the ink plate (13, photo 7). Turn thumb screws (16, photo 8) until there is light and even contact pressure between the ink roller and ink plate.

2.5.2 Jog the machine until there is clear access to the ink plate (13, photo 7).

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2.5.3 Smear a small amount of ink on the ink plate. Use a spatula or similar tool. Do not put globs of ink on the ink plate as this may cause the ink to fly off when the machine is first run.

2.5.4 Run the machine until the ink is smoothed out on the ink plate. Stop the machine. Readjust the position of the ink roller if necessary.

2.5.5 At this time the ink roller should be transferring ink to the surface of the printing element. If it isn't, first check that the ink roller is making light contact with the ink plate. If the ink roller to ink plate pressure is good, then the height of the printing element needs adjustment. Adjust per Paragraph 3.1, Section 3 of this manual. (This adjustment must be made by a qualified maintenance person.)

2.5.6 Clean the printing element and the offset roller (17, photo 8) with Markem cleaner.

2.5.7 Jog the machine until the offset roller is directly above the printing element. Loosen the lock nut (18, photo 8) and turn thumb screw (19, photo 8) until there is light contact pressure between the offset roller and the surface of the printing element. This adjustment will require "fine-tuning" once actual imprints are being made on the product.

2.5.8 Run the machine through several cycles. Check that there is an image on the offset roller. Readjust the pressure between the offset roller and the printing element if there is no image on the offset roller. (See note below.)

NOTE: Be sure there is ink being transferred to the printing element from the ink roller before increasing the offset roller to printing element contact pressure.

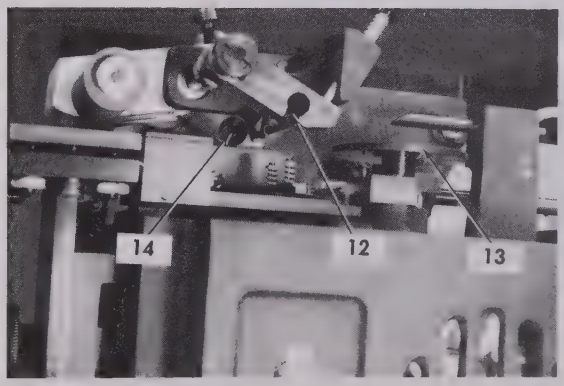

PHOTO 7

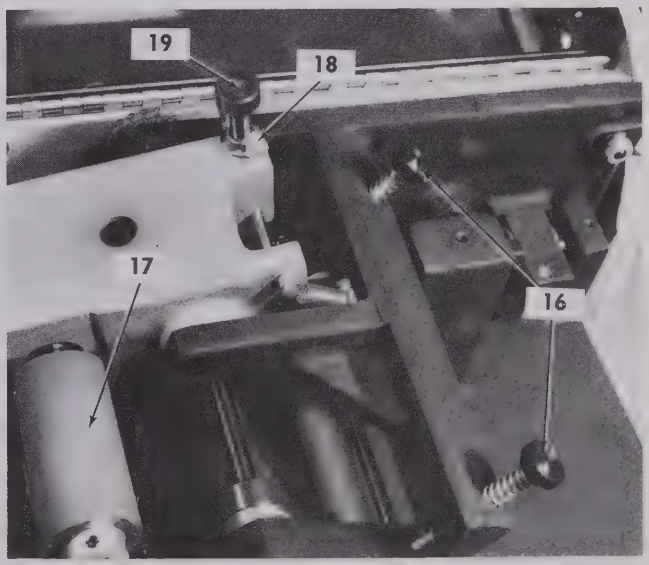

PHOTO 8

2.6 PRINTING THE PRODUCT:

2.6.1 Jog the machine until the print head is fully forward, but not starting to rise upward.

2.6.2 Place the product to be printed on the worktable.

Loosen knob (20, photo 9). Turn knob (21, photo 9) as required until there is light contact pressure between the offset roller and the product. Then tighten knob (20, photo 9) to lock the worktable in position. Remove the product from the worktable.

2.6.3 Run the machine until it completes a cycle and stops with the print head in the back position.

2.6.4 Clean the printing element and the offset roller with Markem cleaner.

2.6.5 Run the machine through several cycles. Place a product on the worktable and cycle the machine once.

2.6.6 Check the imprint on the product. See Imprint, Quality Troubleshooting, Paragraph 3, Section 2 if the imprint is not as desired. If the imprint is not in the correct position, see Paragraph 2.7, Print Registration, that follows.

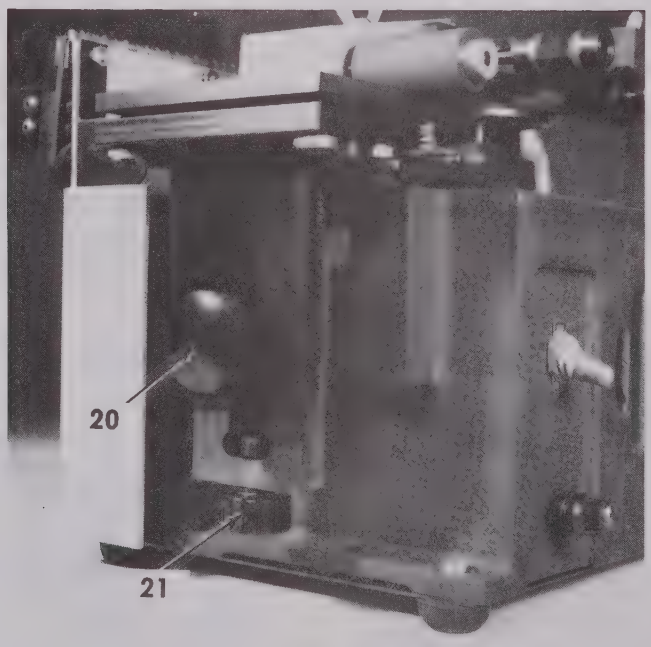

PHOTO 9

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2.7 PRINT REGISTRATION:

2.7.1 If possible, first change the position of the product on the worktable to obtain print registration. If necessary, change the front to back position of the printing element as follows.

2.7.2 Disconnect electrical power to the machine.

2.7.3 Loosen two screws (22, photo 10).

2.7.4 Slide the printing element towards the ink plate to move the imprint away from the operator, or slide it towards the worktable to move the imprint towards the operator.

2.7.5 Tighten two screws (22, photo 10).

2.7.6 Reconnect electrical power.

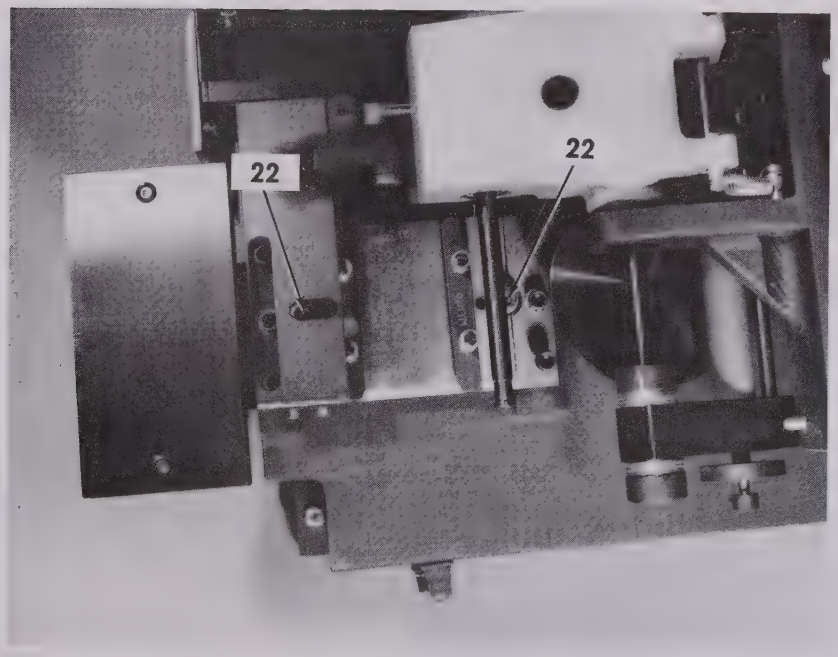

PHOTO 10

SERVICE and REPAIR SECTION 3

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1. LUBRICATION:

1.1 Oil impregnated bushings or sealed bearings are used in the manufacturing of this machine. Neither requires lubrication.

1.2 The gear reducing assembly that is part of the electric motor is a sealed unit that requires no lubrication.

2. REPAIR PARTS INSTALLATION:

2.1 ROTATION OR REPLACEMENT OF THE OFFSET ROLLER:

2.1.1 As the offset roller (24, photo 12) wears from contact with the printing element, rotate it so that an unused portion will be used. Once the entire offset roller shows wear, replace it.

WARNING: Disconnect electrical power to the machine to prevent personal injury.

2.1.2 Loosen setscrew (25, photo 12). Rotate or replace the offset roller. Tighten the setscrew.

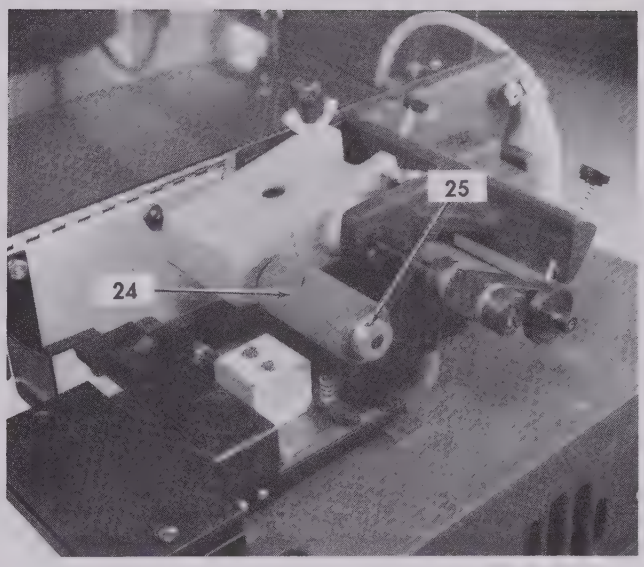

PHOTO 12

2.2 REPLACEMENT OF THE PRINT HEAD PLASTIC DRIVE CHAIN:

WARNING: Disconnect electrical power to the machine to prevent personal injury.

2.2.1 Remove the slotted screw and washer (26, photo 13).

2.2.2 Loosen nut (27, photo 14). Slide the sprocket in its slot towards the worktable. Remove the chain.

2.2.3 Put the new chain on the sprockets. Install screw and washer (26, photo 13). Be sure the chain masterlink is in under the washer.

2.2.4 Slide the sprocket to make the chain finger tight and then tighten nut (27, photo 14). Do not make this chain over tight.

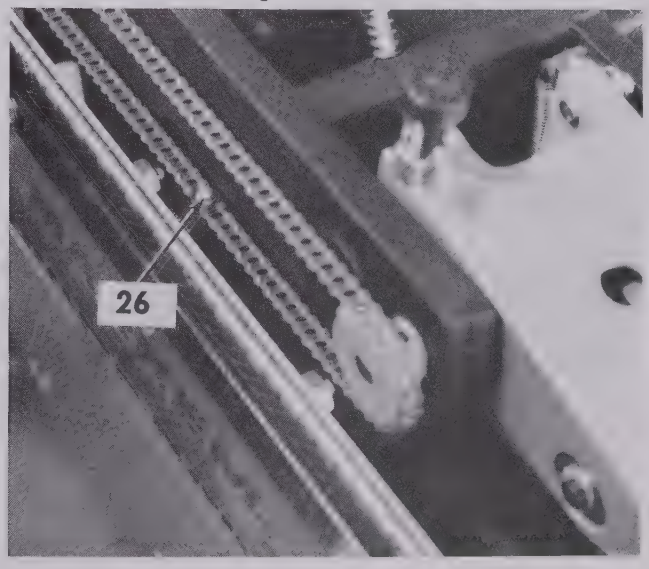

PHOTO 13

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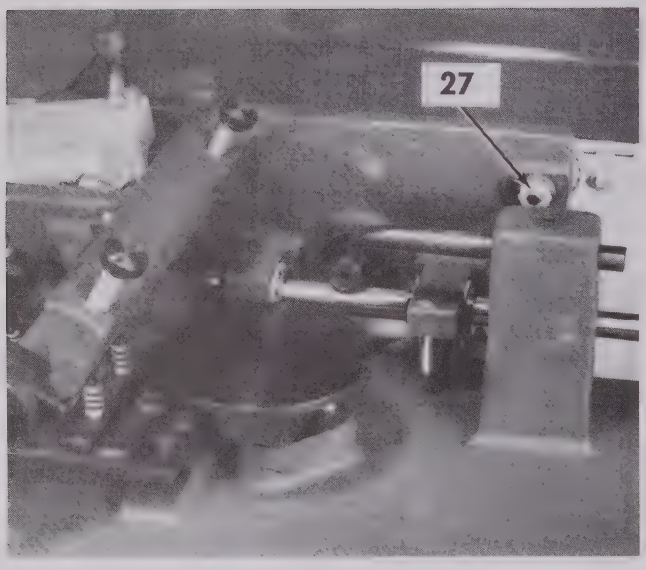

PHOTO 14

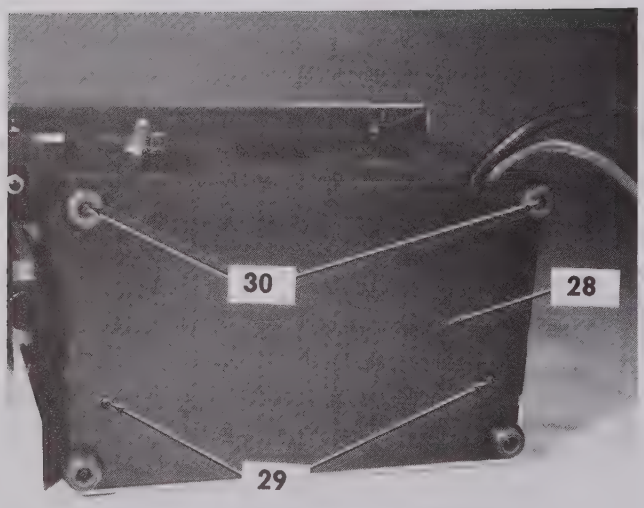

PHOTO 15

2.3 REPLACEMENT OF THE PRINT HEAD STOP POSITION LIMIT SWITCH:

WARNING: Disconnect electrical power to the machine to prevent personal injury.

2.3.1 Put the machine on its side so there is access to the bottom plate (28, photo 15).

2.3.2 Remove two button head screws (29, photo 15) and two rubber feet (30, photo 15) and then lift the bottom plate from the machine.

2.3.3 Push in on brake lever (31, photo 16) and hold. Then push print head bracket (32, photo 16) towards the worktable. If the print head bracket doesn't push easily at first, it will be necessary to manually turn the motor fan (33, photo 16) counterclockwise until the bracket starts moving. Push the bracket away from the limit switch (34, photo 17) far enough to allow working room around the switch.

2.3.4 Remove two slotted screws (35, photo 17) and lift the switch from the bracket.

2.3.5 For future reference, write down what wire numbers are connected to which terminals on the switch. Then break the solder connections.

2.3.6 Solder the wires to the new switch in the same positions as they were removed from on the old switch.

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2.3.7 Fasten the switch in position with two screws (35, photo 17).

2.3.8 Manually push the brake lever (31, photo 17) in and pull the bracket (32, photo 17) back to the stop position. Turn the fan counterclockwise if necessary. At this time the limit switch must be activated. If it isn't go to Paragraph 3.5 of Section 3 and make the machine setting for the limit switch.

2.3.9 Fasten the bottom plate in position with the two button head screws and the two rubber feet screws.

2.4 REPLACEMENT OF THE INK PLATE ONE-WAY BEARING CLUTCHES:

2.4.1 Jog the machine until the print head is fully forward.

WARNING: To prevent personal injury disconnect electrical power to the machine immediately after jogging the print head to the forward position.

2.4.2 Remove two button head screws (29, photo 15) and two rubber feet (30, photo 15) and remove the bottom plate from the machine.

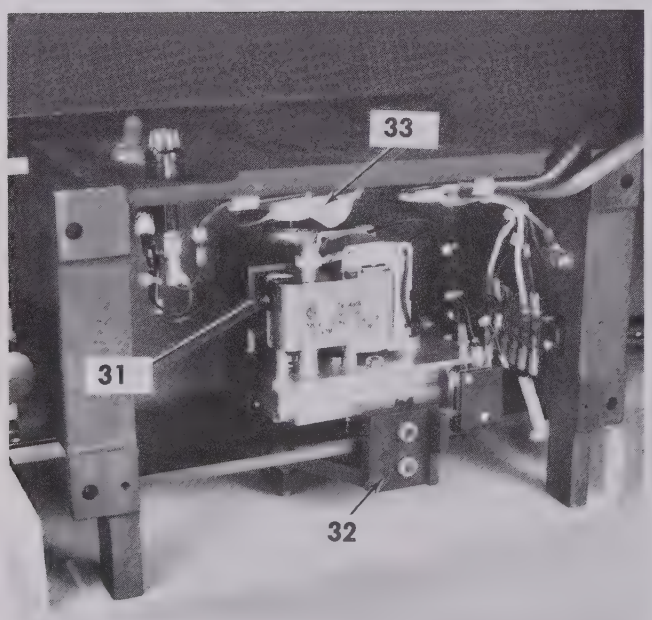

PHOTO 16

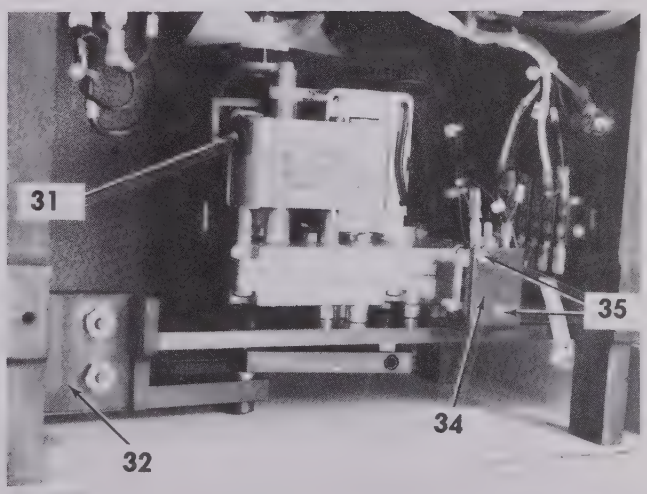

PHOTO 17

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2.4.3 Loosen screw and remove the collar (36, photo 18).

2.4.4 Lift the ink plate from the machine. Retain the washer under the ink plate, the ratchet link (37, photo 19) and the spring.

2.4.5 The bearing clutch in the ratchet link, the oil impregnated bushing and the bearing clutch located directly under the oil impregnated bushing are all "press fit" into position. Remove these three items by force.

NOTE: The recommended procedure is to replace the oil impregnated bushing at the same time the bearing clutches are replaced.

2.4.6 Press fit the new clutch into the ratchet link with the arrow on the clutch oriented to the link as shown in diagram 3.

2.4.7 Press fit the new clutch into the machine casting with the arrow on the clutch oriented to the casting as shown in diagram 4. The clutch must be flush with the bottom of the hole in the casting.

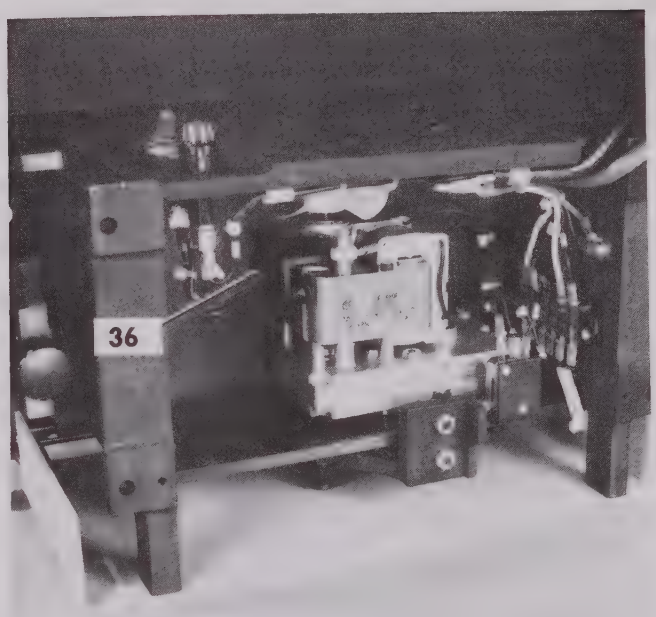

PHOTO 18

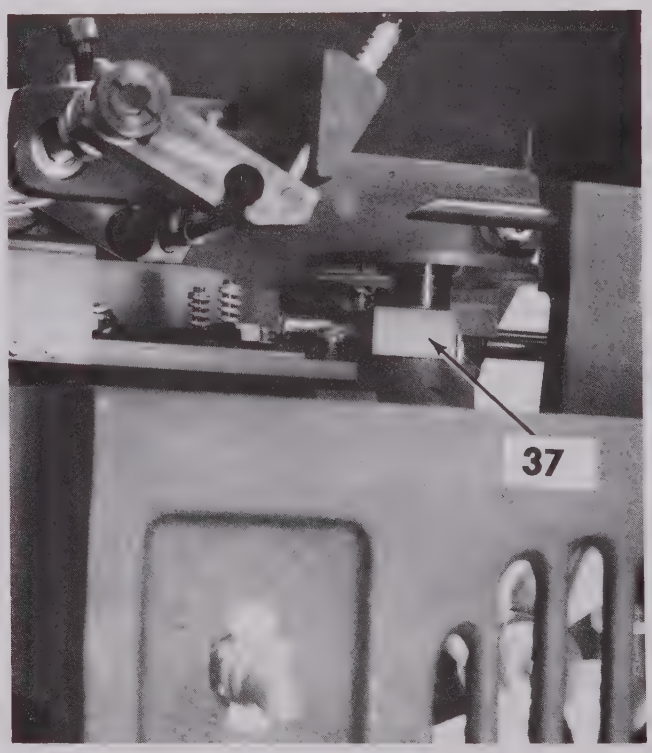

PHOTO 19

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2.4.8 Press fit the new oil impregnated bushing into the casting hole. The bushing must be flush with the top of the hole.

2.4.9 Assemble the ratchet link, spring and ink plate to the machine.

2.4.10 Put the collar (36, photo 18) on the end of the ink plate arbor. Tighten the set screw in the collar. (When the collar is in the correct position, the ink plate can not be moved up or down.)

2.4.11 Install the bottom plate with the two button head screws (29, photo 15) and the two rubber feet (30, photo 15).

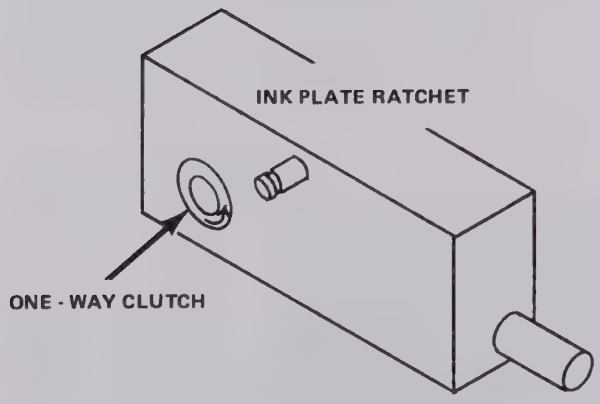

DIAGRAM 3

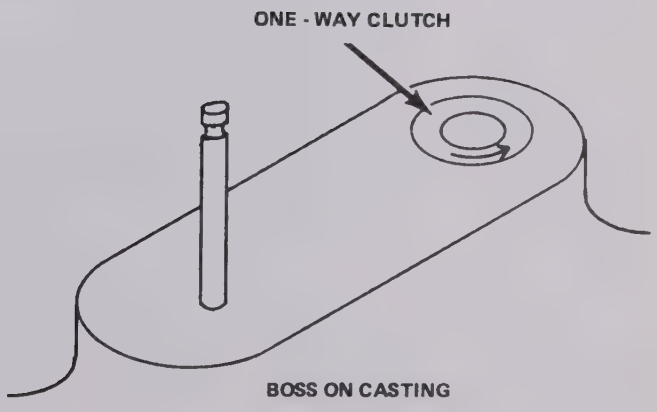

DIAGRAM 4

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2.5 REPLACEMENT OF THE MOTOR:

2.5.1 Jog the machine until the print head is fully forward.

WARNING: To prevent personal injury, disconnect electrical power to the machine immediately after jogging the print head to the forward position.

2.5.2 Remove four screws (38, photo 20) and two screws (39, photo 20). Remove the anchor bracket for the print head chain. Remove the side guard from the machine.

2.5.3 Loosen setscrew (40, photo 21) in the crank. This frees the motor drive shaft from the crank.

2.5.4 Remove the motor wires #2 and #5 from the terminal strip. Make note of the terminal number they are connected to for future reference. (If desired, the motor wires can be disconnected from the terminal strip after the motor mount screws have been removed. However, care must be taken not to pull the wires when the motor is moved.)

2.5.5 While using a wrench to keep the hex nuts (41, photo 22) from turning, remove the four motor mount screws.

2.5.6 Carefully maneuver the motor out of the machine casting.

2.5.7 Install the new motor and fasten with the four screws and nuts (41, photo 22).

2.5.8 Connect motor wires #5 and #2 to the terminal strip.

2.5.9 Fasten the crank (42, photo 21) to the motor drive shaft by tightening setscrew (40, photo 21).

2.5.10 Fasten the bottom plate in position with the two button head screws and the two rubber feet.

2.5.11 Fasten the side guard in position with four screws (38, photo 20). Install the anchor bracket using two screws.

2.5.12 Connect electrical power to the machine. Run the machine until the print head stops in the back position.

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PHOTO 20

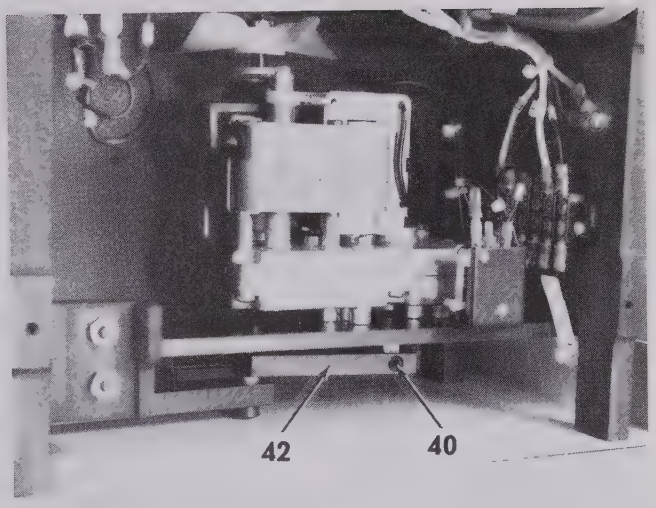

PHOTO 21

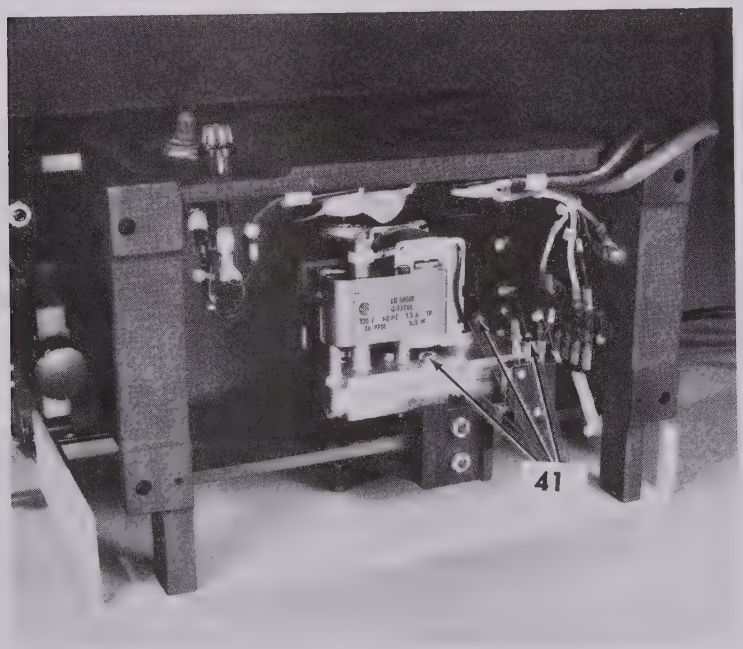

PHOTO 22

2.6 REPLACEMENT OF THE OFFSET ROLLER DRIVE BELT:

2.6.1 Remove knob (43, photo 23) and remove the worktable from the machine.

2.6.2 Jog the machine until the print head is fully forward.

2.6.3 Disconnect electrical power to the machine to prevent personal injury.

2.6.4 Remove the offset roller (44, photo 24).

2.6.5 Remove the inking roller (45, photo 24).

2.6.6 Loosen setscrew (46, photo 25) in the front sprocket.

2.6.7 Remove one end of both springs (47, photo 24).

2.6.8 Loosen setscrew in the metal collar (48, photo 26).

2.6.9 Loosen setscrew in the plastic gear (49, photo 26).

2.6.10 Look at the position of all parts. Also see diagram 5.

2.6.11 Slowly pull the shaft (50, photo 26) out of the casting while catching all parts as they come off the end of the shaft.

2.6.12 Loosen setscrew (51, photo 26) in the metal collar. Loosen setscrew (52, photo 26) in the plastic gear.

2.6.13 Slide the shaft towards the left and out of the casting while catching the parts as they slide off the end of the shaft.

2.6.14 Replace the defective part.

2.6.15 Reverse this procedure to reassemble. Be sure when the setscrews in collar (48, photo 26) and collar (53, photo 26) are tightened that all left to right movement of the assembly is eliminated by sliding the collar fully to the left (as seen from standing in front of the machine). Refer to diagrams 5 and 6 for the position of all parts.

NOTE: Tighten the set screw in the plastic gears on the flat of the shaft.

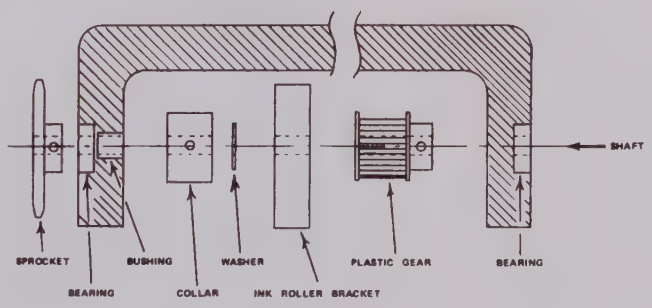

DIAGRAM 5

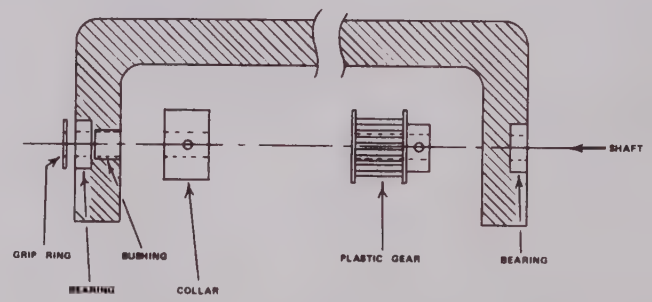

DIAGRAM 6

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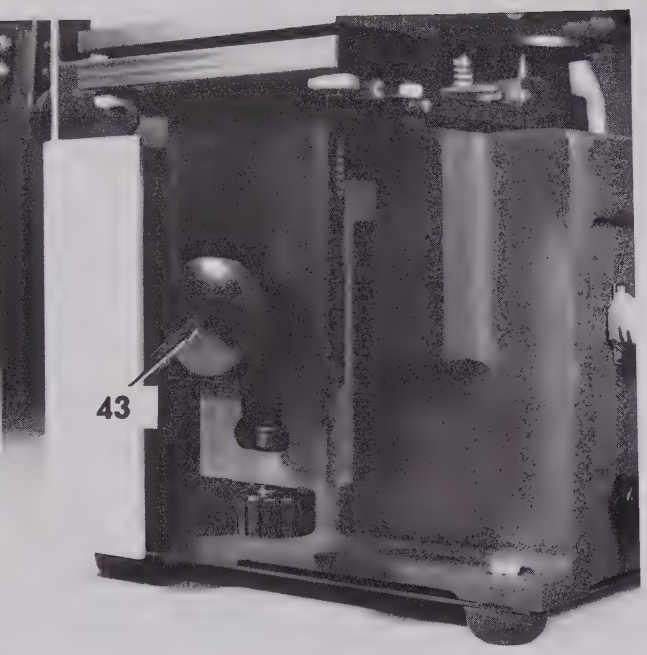

PHOTO 23

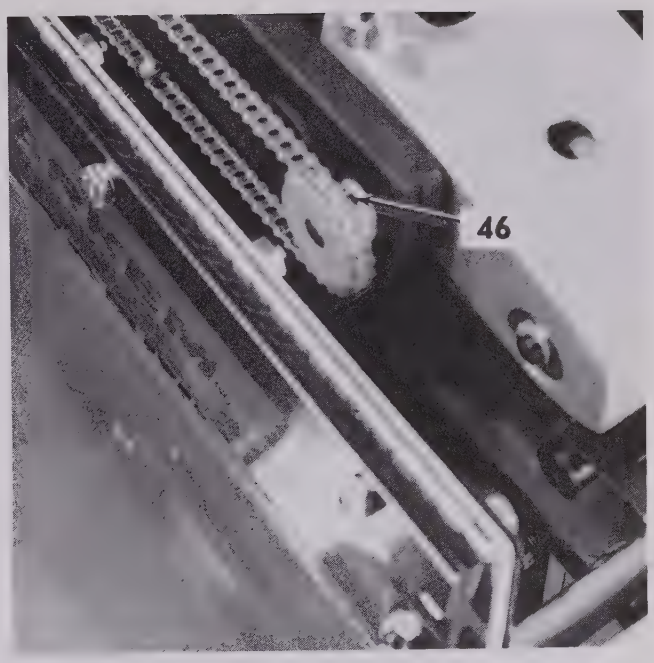

PHOTO 25

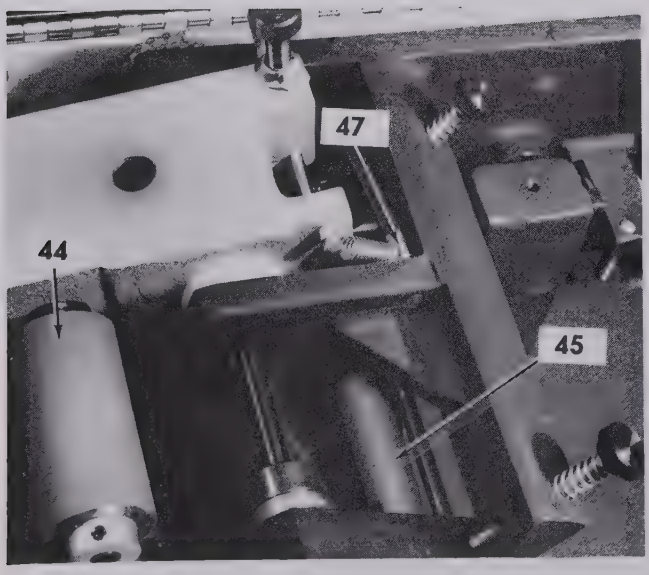

PHOTO 24

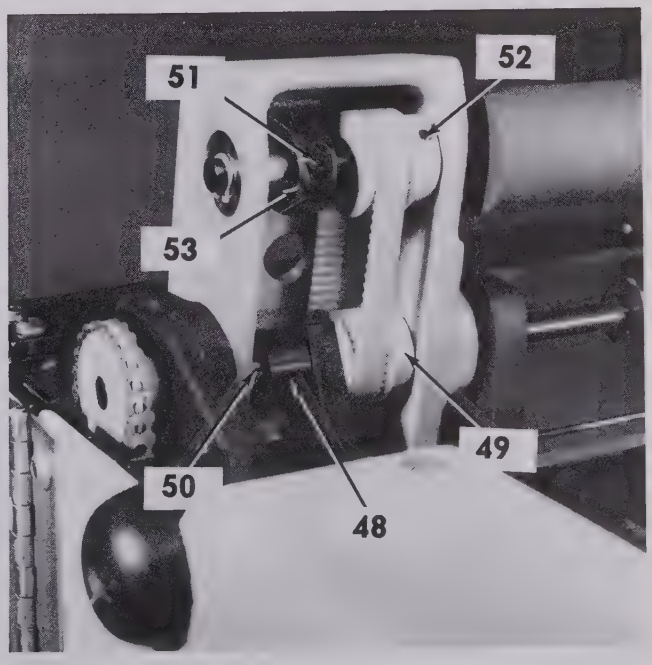

PHOTO 26

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3. MACHINE SETTINGS:

NOTE: Machine settings are made at the factory when the machine is assembled and tested. These settings will not normally need adjustment except during replacement or repair procedures.

3.1 SETTING FOR THE HEIGHT AND LEVEL OF THE PRINTING ELEMENT HOLDER:

3.1.1 Alternately run the machine and adjust the height of the ink roller until a "freshly cleaned" ink roller picks up ink evenly across the full width of the ink plate. It may be necessary to repeat cleaning the ink roller a number of times in order to visually ascertain that the ink roller is picking up the ink evenly from the ink plate. Once ink is picked up evenly, the ink roller is parallel with the surface of the ink plate. (Use no more pressure between the ink roller and ink plate than is necessary.)

3.1.2 Unscrew four screws (54, photo 27) two or three full turns. This lowers the printing element holder.

3.1.3 Install a printing element (or a gauge block if available) that has legend over the entire print area capability of the machine.

3.1.4 Alternately run the machine and turn screws (54, photo 27) until the ink roller is just evenly inking the surface of all of the legend characters. It will be necessary to clean the surface of the printing element a number of times while making this adjustment. Use no more pressure between the ink roller and the printing element than is necessary. Once the printing element is being inked evenly, tighten two screws (55, photo 27) to fasten the holder in place.

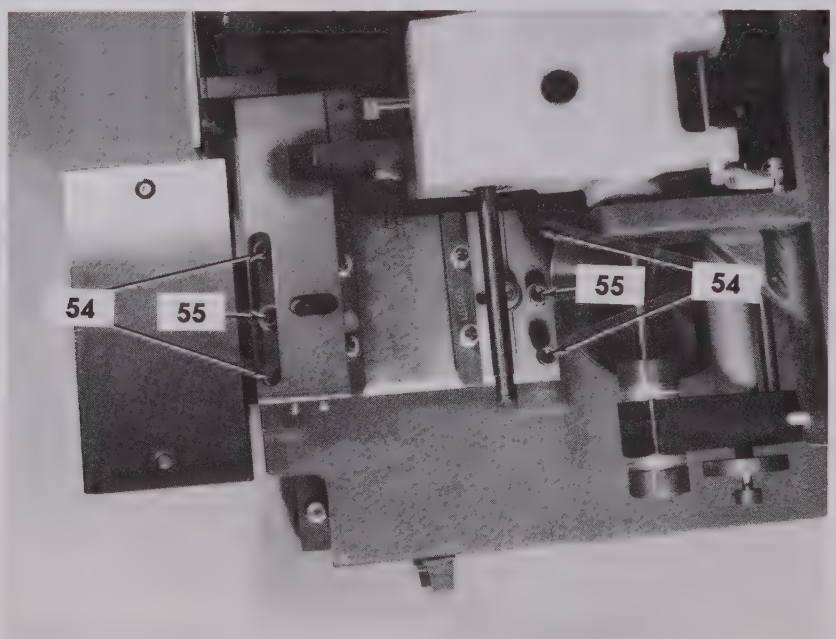

PHOTO 27

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3.2 SETTING FOR THE POSITION OF THE PRINT HEAD LONG GUIDE ROD:

3.2.1 Loosen setscrew (56, photo 28). Then jog the machine until the print head is all the way forward. The crank shafts will be fully extended. Loosen setscrew (57, photo 29).

WARNING: To prevent personal injury, disconnect electrical power to the machine immediately after jogging the print head to the forward position.

3.2.2 Move the long guide rod (58, photo 28) forward or backward as necessary until the end of screw (59, photo 30) is seated on the lowest milled surface of bracket (60, photo 30). See Diagram 7. Then tighten setscrew (57, photo 29).

NOTE: It may be necessary to tap on the end of guide rod with a small mallet to make it move.

3.2.3 Connect electrical power to the machine. Jog the machine until the print head is fully back and stopped.

3.2.4 Tighten setscrew (56, photo 28).

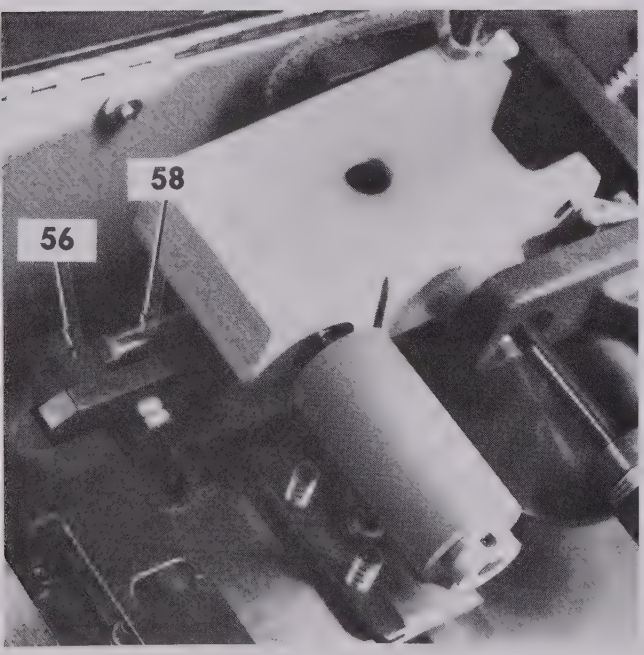

PHOTO 28

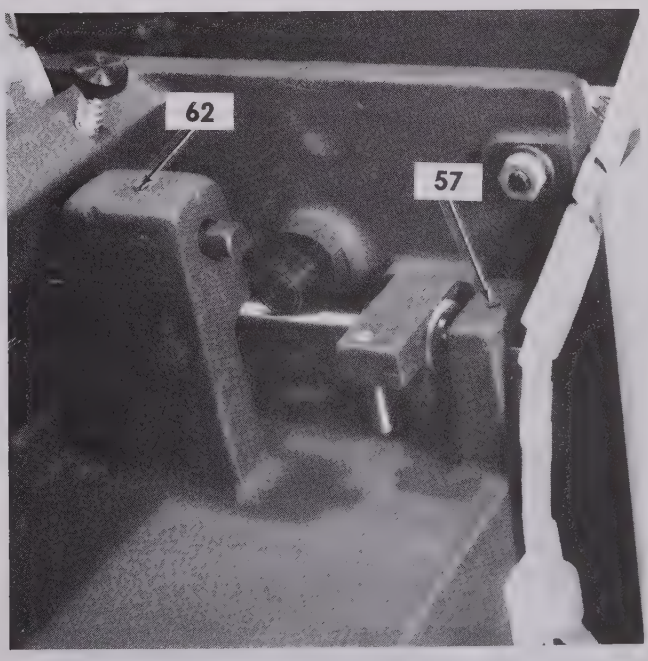

PHOTO 29

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3.3 SETTING FOR THE POSITION OF THE PRINT HEAD SHORT GUIDE ROD:

IMPORTANT: Paragraph 3.1 of this section must have been completed before doing this adjustment.

3.3.1 Install the printing elements.

3.3.2 Jog the machine until the offset roller is over the printing elements.

3.3.3 Loosen the lock nut (61, photo 30) and turn the thumb screw (59, photo 30) until the offset roller just makes contact with the printing elements. Tighten the lock nut (61, photo 30).

3.3.4 Loosen the set screw (62, photo 29) that holds the short rod and manually move the short rod fully back.

3.3.5 Run the machine to the stop position.

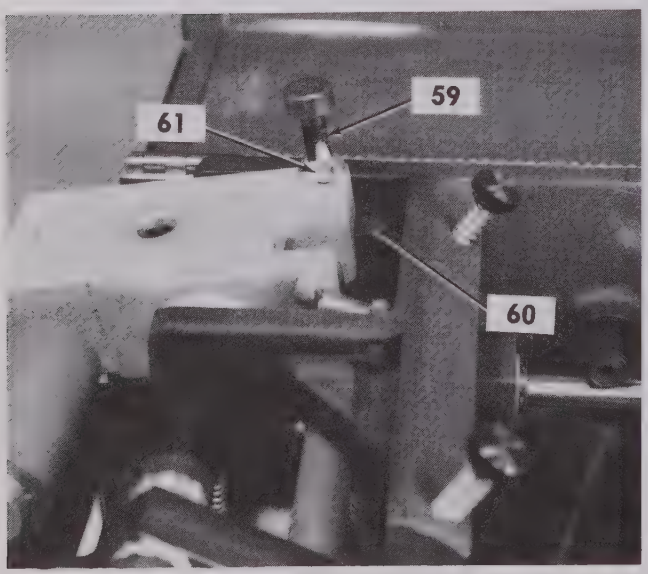

PHOTO 30

3.3.6 Push the short guide rod toward the front of the machine until the end of the screw (59, photo 30) rests on the second milled surface of the bracket. See diagram 8. A "click" will be heard. After the "click", continue to push the short guide rod approximately another 1/32 inch.

3.3.7 Tighten the setscrew (62, photo 29).

NOTE: Check that the end of the short guide rod does not make contact with the plastic gear.

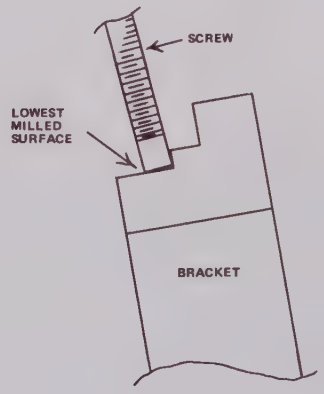

DIAGRAM 7

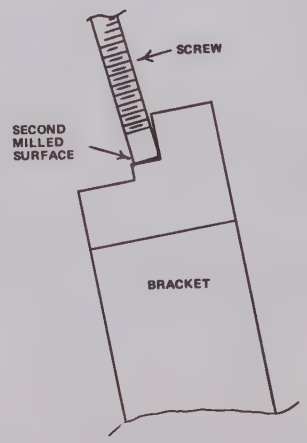

DIAGRAM 8

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3.4 SETTING FOR THE PRINT HEAD LONG ROD ECCENTRIC CAM:

3.4.1 Jog the machine until the print head is fully forward.

3.4.2 Disconnect electrical power to the machine to prevent accidental machine cycling and possible personal injury.

3.4.3 Remove four screws (63, photo 31) and two screws (64, photo 31). Remove the anchor bracket for the print head. Remove the side guard.

NOTE: The flat head screw on the end has a spacer.

3.4.4 Loosen nut (65, photo 32).

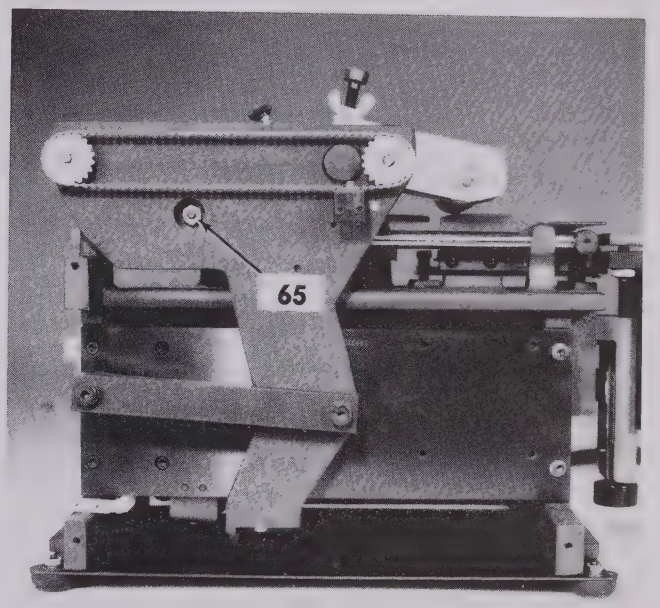

PHOTO 32

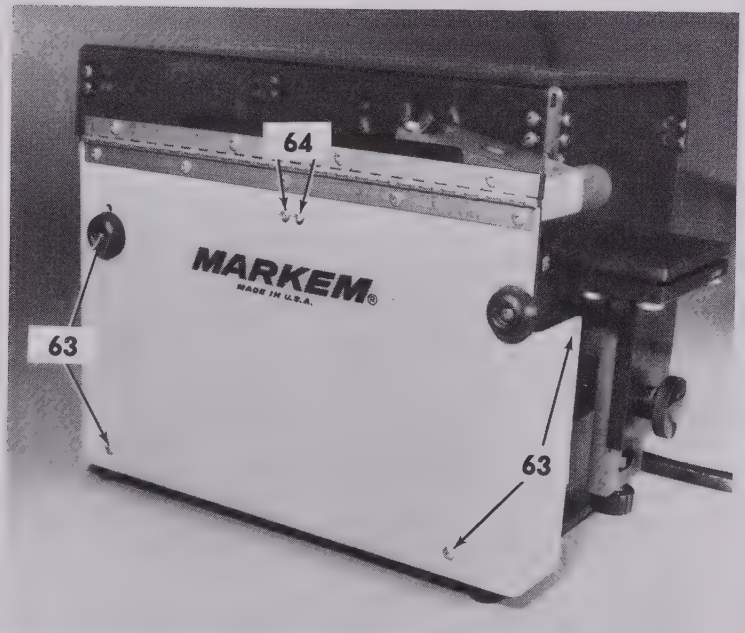

PHOTO 31

3.4.5 Turn eccentric cam (66, photo 33) to a position where it is making firm contact with the long rod but at the same time can still be turned with fingers.

3.4.6 Tighten nut (65, photo 32) while holding the cam screw (66, photo 33) stationary.

3.4.7 Fasten the side guard in place with the four screws. Install the anchor bracket using two screws.

NOTE: Insure the spacer is in position.

3.4.8 Connect electrical power and jog the machine until the print head is fully back.

3.5 SETTING OF THE PRINT HEAD STOP POSITION LIMIT SWITCH:

3.5.1 Remove bottom plate.

3.5.2 Loosen two hex head cap screws (67, photo 34).

3.5.3 Move the limit switch bracket (68, photo 34) in the necessary direction so when the print head is fully back the limit switch is activated.

3.5.4 Tighten two screws (67, photo 34).

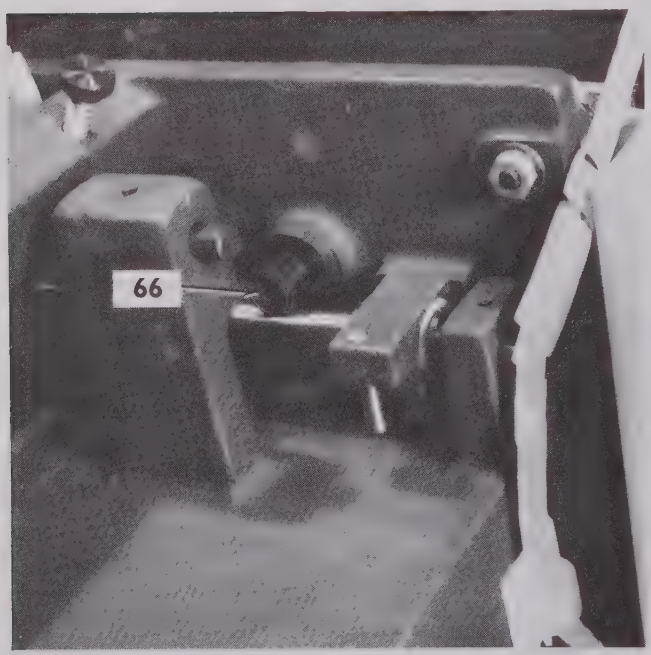

PHOTO 33

PHOTO 34

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4. MECHANICAL THEORY OF OPERATION:

Machine drive is taken from the motor drive shaft by means of a crank attached to the drive shaft. Other linkages attached to the crank push and pull the print head forward and back. The print head itself has ball bushings which ride on a long guide rod during the forward and back motions.

One cycle consists of the print head leaving the stop position, traveling forward to the print position, and then returning to the original stop position. On the forward stroke of the print head, the following takes place:

The offset roller moves across the surface of the type. Ink is transferred from the type to the offset roller and then, as the offset roller continues to move forward, it rolls across the surface of the item being printed. At this point ink is transferred from the offset roller to the product. At the very end of the forward stroke the offset roller assembly is raised up approximately 1/8" to prevent the offset roller from printing the product on the return stroke.

Simultaneously with the offset roller movement, the ink roller is moving forward. Initially the ink roller moves across the surface of the ink plate. This action smooths the ink to an even film on the roller as well as the ink plate. As the ink roller continues to move forward it rolls across the surface of the type, transferring a new film of ink to the type, replenishing that which was just removed by the offset roller.

At the end of the forward stroke the ink plate is mechanically rotated, through the use of one-way bearing clutches, approximately 15-20 degrees.

On the return stroke of the print head, the following takes place:

The offset roller returns towards the back of the machine. At the end of the return stroke the offset roller assembly is mechanically lowered to the printing height.

Simultaneously with the offset roller movement, the ink roller moves back across the surface of the type. This transfers ink to the type again. The ink roller continues back and rolls over the surface of the ink plate. Again, there is more smoothing and transferring action of the ink to the ink roller in preparation for the next cycle.

At the very end of the return stroke, a limit switch is mechanically actuated. This switch now interrupts power to the motor and the motor stops, completing the cycle.

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5. ELECTRICAL THEORY OF OPERATION:

With the "ON/OFF" toggle switch in the "ON" position, and a good fuse installed, 230V electrical power will be present at the primary of the step down transformer (See note below). The transformer secondary voltage (115VAC) is applied to the cover mercury interlock switch.

NOTE: On machines with 115V electrical systems, no transformer is used. The 115V power is wired through the switch and fuse to the mercury interlock switch.

If the mercury interlock switch is closed (cover closed) power will be applied to the footswitch and the stop position limit switch. The stop position limit switch is mechanically held in the open position when the machine is in its normal stop position. The footswitch is open until pressed.

Pressing (closing) the footswitch allows power to be applied directly to the AC motor which starts running. Once the machine moves out of the stop position the footswitch can be released as the stop position limit switch returns to its normally closed position. The machine will now continue to run until the stop position limit switch is mechanically actuated open at the return of the print head to the stop position.

If, during the cycle, the cover is opened which in turn opens the mercury interlock switch, the circuit will be broken and power removed from the AC motor. The motor brake will then stop the machine almost immediately.

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6. MECHANICAL TROUBLESHOOTING:

TROUBLE	POSSIBLE PROBLEM	ACTION
6.1 Machine does not run.	1. Machine not connected to electrical power source.	1. Connect
	2. "OFF/ON" switch	1. Put in the "ON" position.
	3. Print head guard open	1. Close
	4. Machine jammed	1. Check for foreign objects jammed in the moving parts of the machine.
6.2 Machine does not stop automatically at the end of a cycle.	1. Setting of the stop position limit switch.	1. Check and if necessary adjust the position of the switch per Paragraph 3.5 of Section 3.
	2. Footswitch jammed closed.	1. Remove cause of jam.
	3. Motor brake spring broken, disabling the brake and letting the motor coast after power is removed.	1. Replace spring.
6.3 Offset roller doesn't rotate.	1. Setscrew in the offset roller loose.	1. Tighten. Also, there are two plastic gears, with setscrews, (under the offset roller casting) that drive the offset roller. If either of these setscrews are loose the roller won't turn when the print head moves.
6.4 Ink Plate does not rotate.	1. Bearing Clutches	1. Replace per Paragraph 2.4 of Section 3.
6.5 Print head doesn't raise up at the end of the forward stroke.	1. Setting of the print head long guide rod.	1. Adjust per Paragraph 3.2 of Section 3.

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TROUBLE	POSSIBLE PROBLEM	ACTION
6.6 Print head doesn't lower at the end of the return stroke.	1. Setting of the print head short guide rod.	1. Adjust per Paragraph 3.3 of Section 3.
6.7 Print head is "loose".	1. Eccentric cam setting.	1. Adjust per Paragraph 3.4 of Section 3.
6.8 Ink roller, when set to the height of the ink plate, doesn't contact the type.	1. Setting of the printing element holder.	1. Adjust per Paragraph 3.1 of Section 3.
6.9 Motor runs but print head doesn't move.	1. Crank setscrew loose.	1. Tighten the setscrew in the crank attached directly to the motor drive shaft. Disconnect electrical power and remove the side guard for access to the crank.

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7. ELECTRICAL TROUBLESHOOTING:

WARNING: Electrical troubleshooting must be done by qualified electrical maintenance personnel.

WARNING: Disconnect electrical power when making electrical tests unless the electrical power is required.

Use the following Markem wiring diagrams for this machine:

#0551867	115V/50-60Hz/1Ph Systems
#0551868	230V/50-60Hz/1Ph Systems

"Always look for loose connections"

TROUBLE	POSSIBLE PROBLEM	ACTION
7.1 Machine does not run.	1. Step down Transformer (230V systems only)	1. Check for input to and output from the transformer.
	2. Fuse blown.	1. Replace.
	3. Machine not connected to power source.	1. Connect.
	4. "OFF/ON" switch.	1. Check continuity.
	5. Mercury interlock switch on cover.	1. Check continuity.
	6. Footswitch.	1. Check continuity.
	7. Motor.	1. Check continuity. Check that power is applied to motor. Replace if power is applied but motor doesn't run (check when load is removed from motor to eliminate possible mechanical binds).

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TROUBLE	POSSIBLE PROBLEM	ACTION
7.2 Machine only runs when footswitch is pressed.	1. Stop position limit switch.	1. Check continuity.
7.3 Machine runs continuously when the footswitch is released.	1. Footswitch.	1. Check that footswitch continuity is broken when switch is released.
	2. Stop position limit switch.	1. Check that the limit switch continuity is broken when the plunger is pushed in.
7.4 Machine cycling does not stop when the cover guard is opened.	1. Coverguard mercury interlock switch.	1. Check that continuity is broken when the switch is moved from the horizontal position.

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SCHEMATICS
SECTION 4

		PAGE
0551867	WIRING SCHEMATIC 115 VOLTS	4-2
0551868	WIRING SCHEMATIC 230 VOLTS	4-3

0854991
4-84

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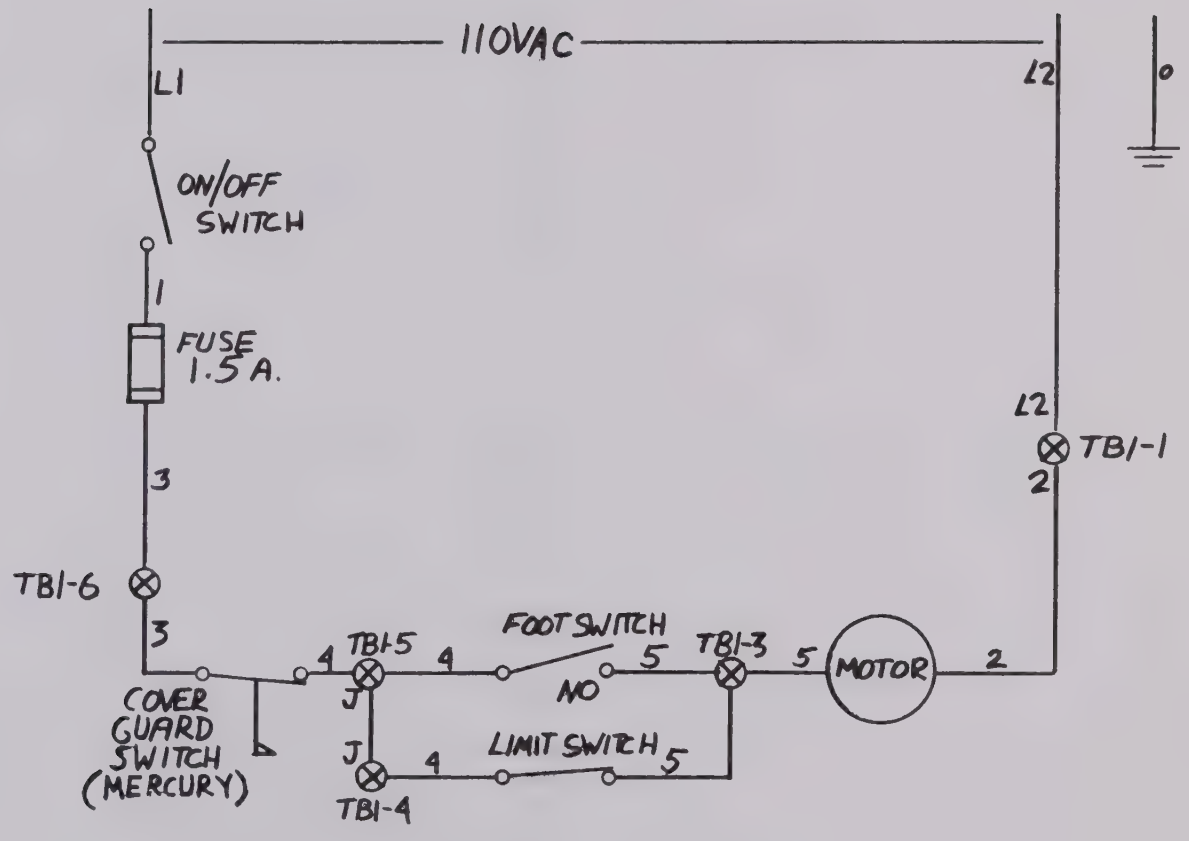
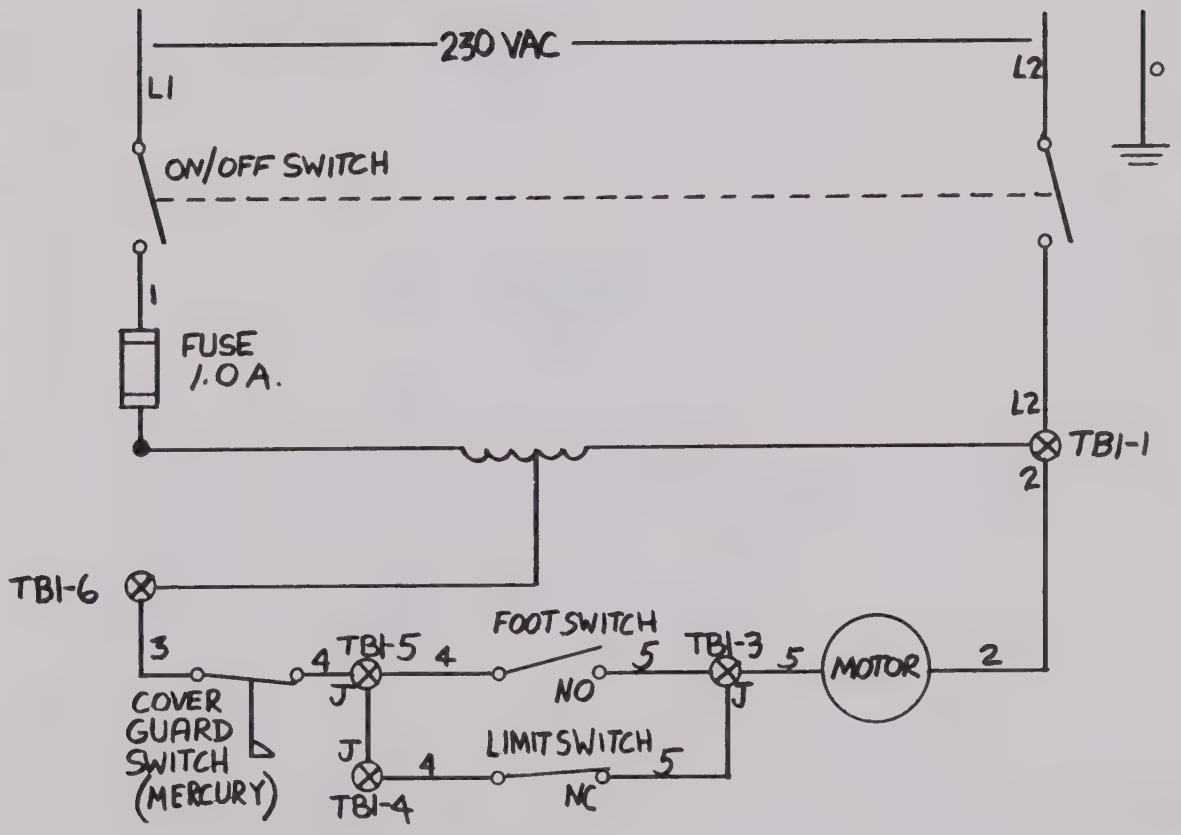
0551867 WIRING SCHEMATIC 115 VOLTS



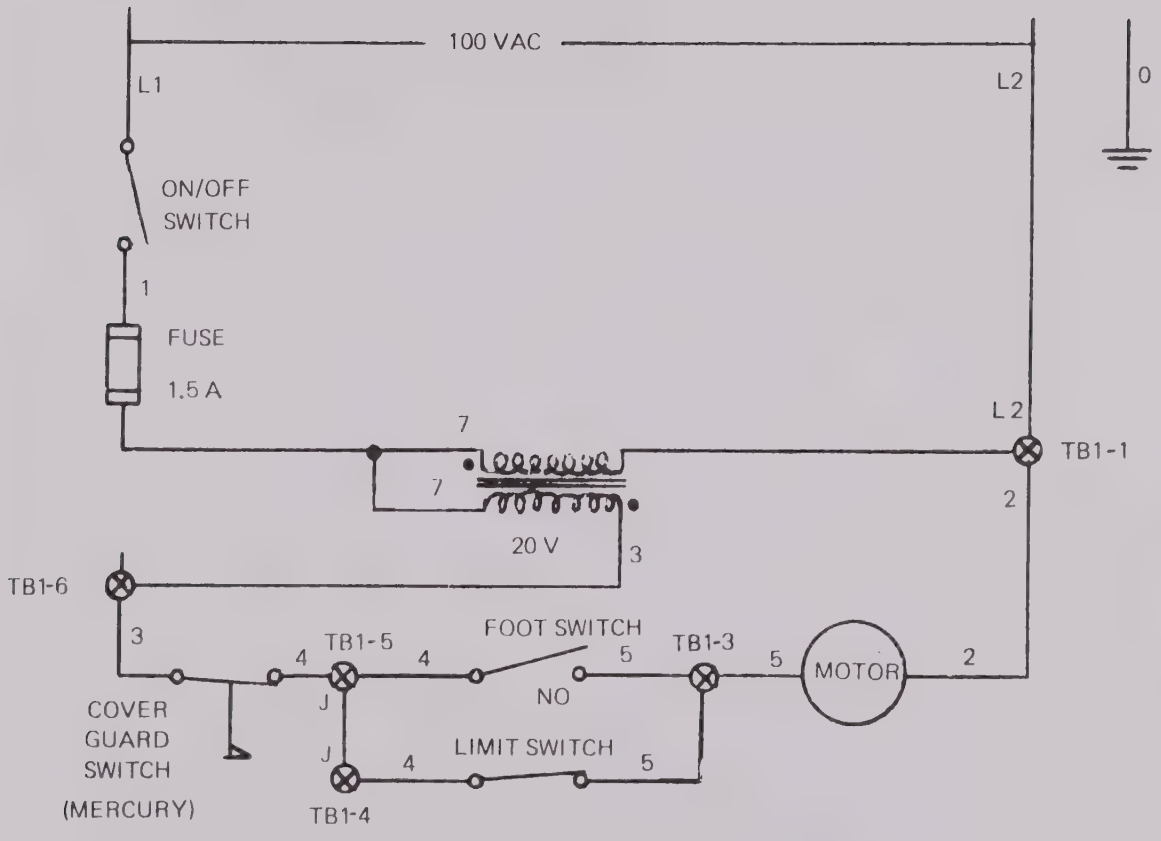
MARKEM® CORPORATION KEENE,NH 03431 USA 603 352-1130

0551868 WIRING SCHEMATIC 230 VOLTS



MARKEM CORPORATION KEENE, NH 03431 USA 603 352-1130

MAIN WIRING SCHMATIC 100 VAC 0551935



PARTS ILLUSTRATIONS
SECTION 5

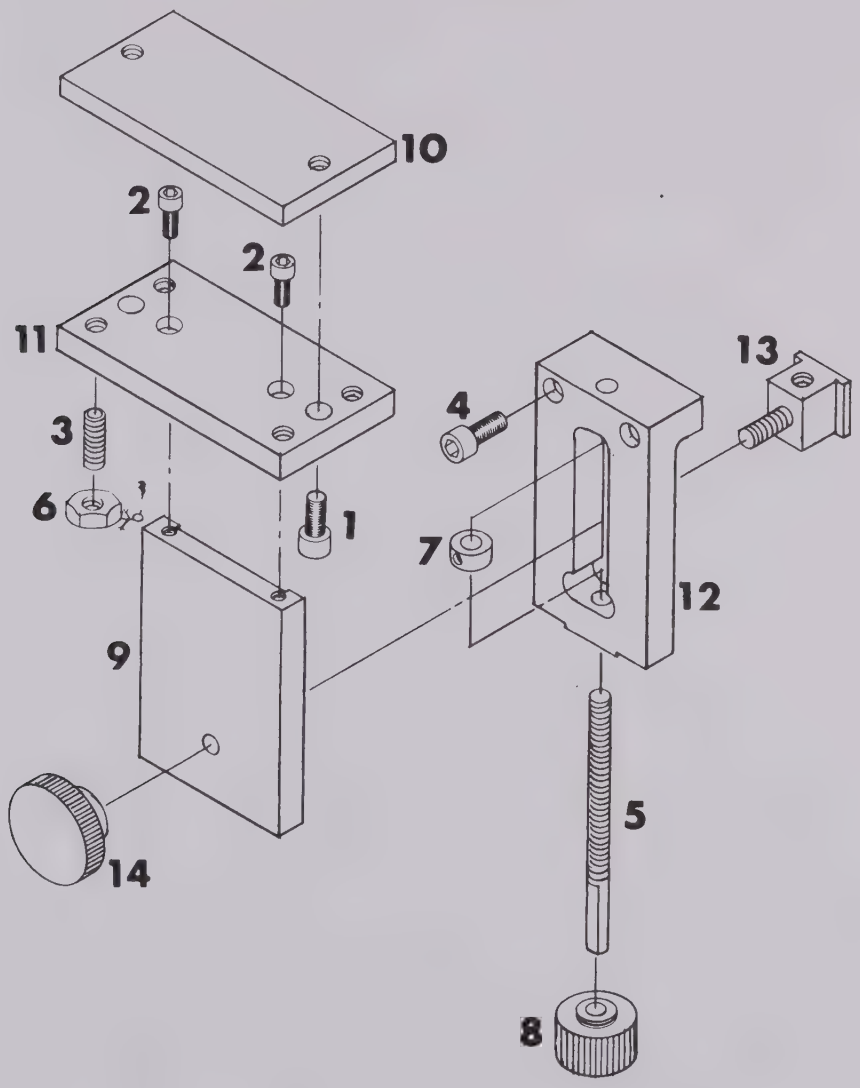
IMPORTANT

This section may contain options that your machine does not have.

Check to insure that you are ordering the correct part from the correct page as listed on your machine equipment list (M.E.L.).

ORDERING PARTS	TITLE	P NUMBER
When ordering parts for this machine include: machine serial number, P number, quantity needed, 7 digit part number, and the part description.	**WORK TABLE**	**0825232**

MODEL 527/528



Call No.	Qty.	Part No.	Description
1	2	0110079	Soc Cap Screw 1/4-20 x 5/8 (1 shown)
2	2	0110101	Soc Cap Screw 10-32 x 1/2
3	4	0110321	Soc Set Screw 1/4-20 x 3/4 (1 shown)
4	2	0110416	Soc Cap Screw 10-32 x 1-1/4 (1 shown)
5	1	0112254	Adjusting Screw
6	4	0150046	Hex Nut 1/4-20 (1 shown)
7	1	0500006	Collar 1/4
8	1	0750953	Knob
9	1	1213362	Slide Plate
10	1	1213363	Work Table Plate
11	1	1213364	Sub Plate
12	1	1213365	Slide Bracket
13	1	1213371	Adjusting Block
14	1	3310112	Knurled Knob

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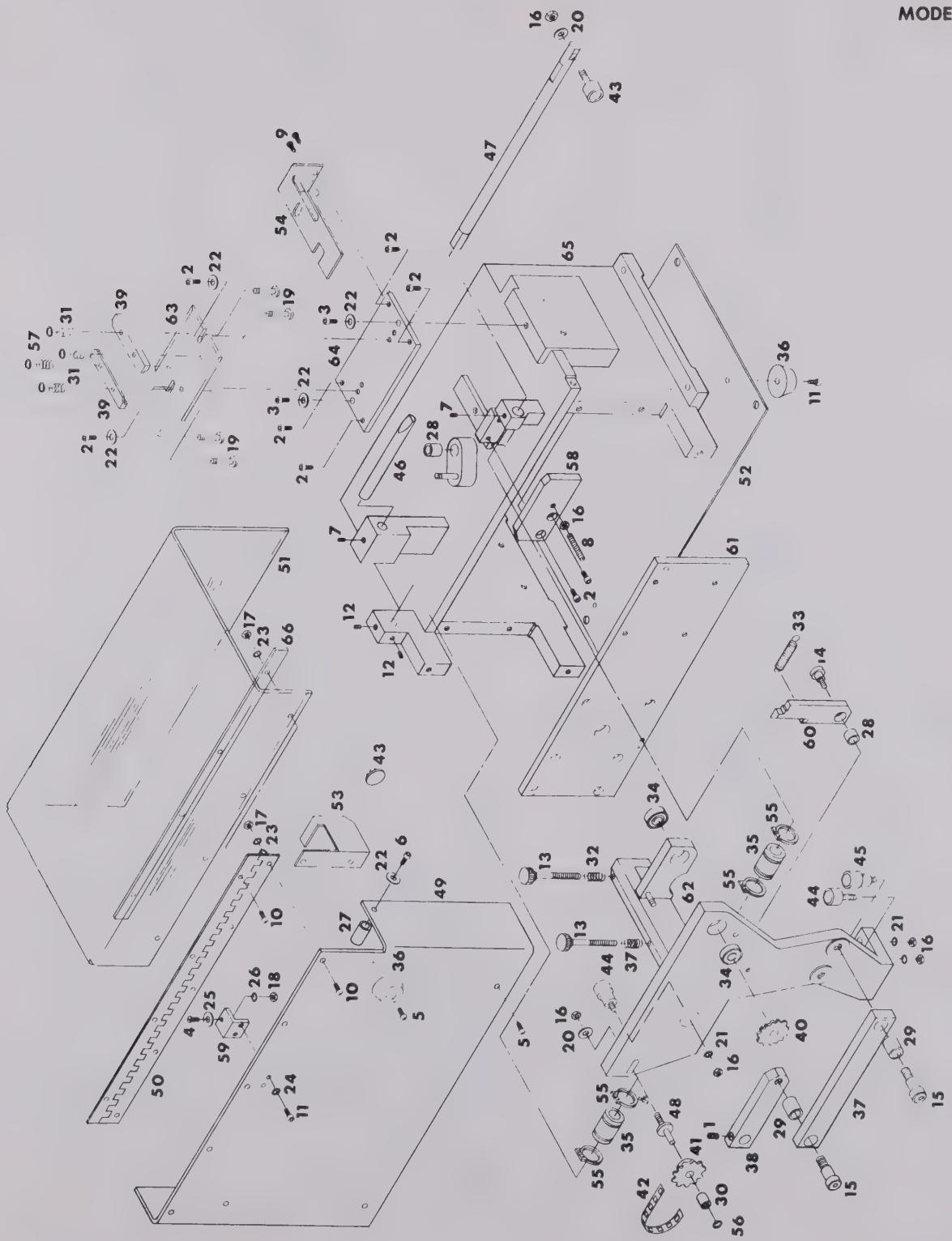
ORDERING PARTS	TITLE	P NUMBER
When ordering parts for this machine include: machine serial number, P number, quantity needed, 7 digit part number, and the part description.	**MAIN FRAME**	**0825236**

MODEL 527

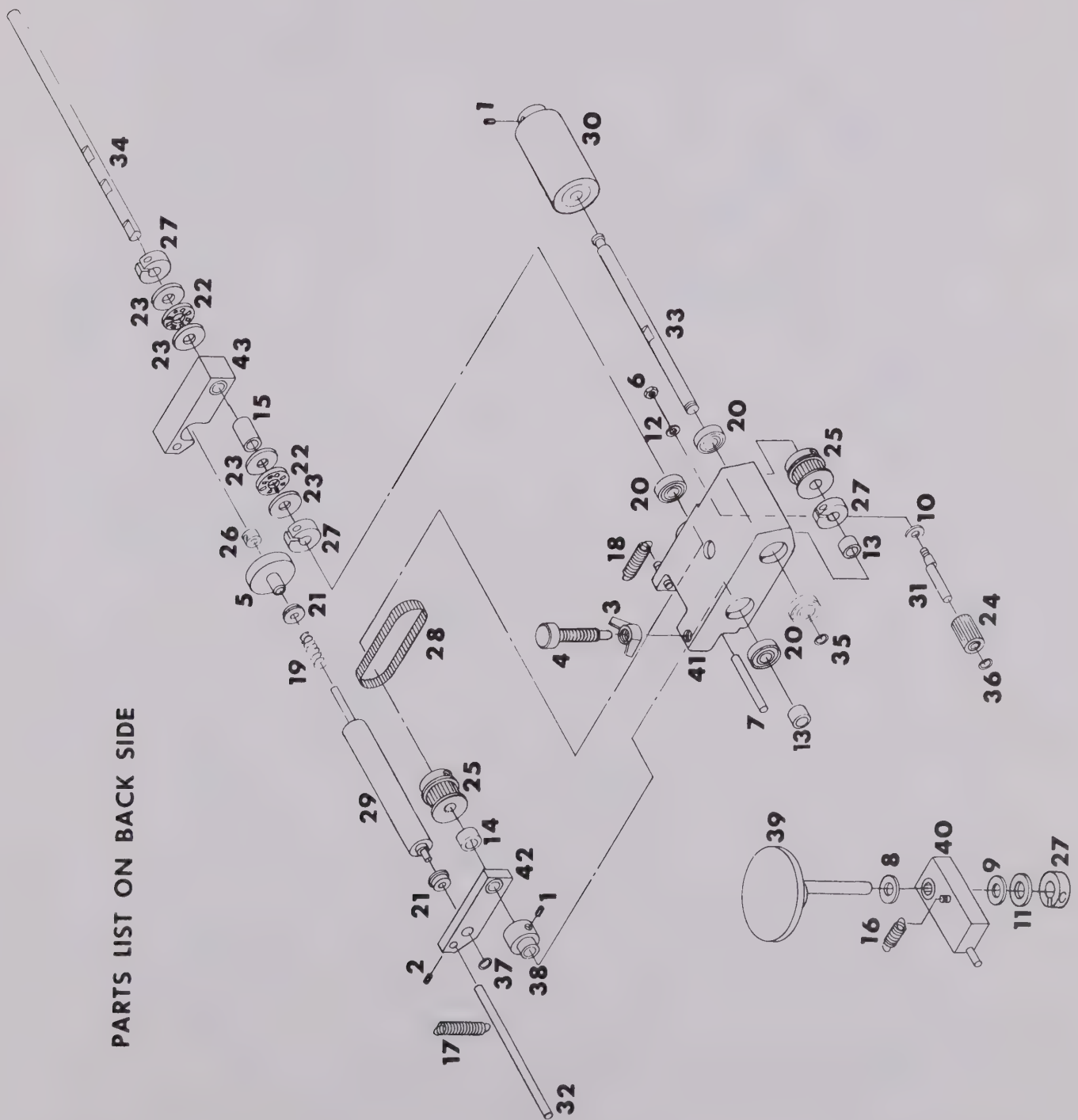


PARTS LIST ON BACK SIDE

Call No.	Qty.	Part No.	Description
1	1	0110050	Soc Set Screw 1/4-20 x 1/2
2	8	0110055	Soc Cap Screw 8-32 x 3/8
3	2	0110113	Soc Cap Screw 8-32 x 3/4
4	1	0110129	Fil Hd Screw 2-56 x 3/8
5	4	0110155	Soc Bt Hd Scr 8-32 x 3/8 (2 shown)
6	1	0110299	Soc Cap Screw 8-32 x 1
7	2	0110343	Soc Set Screw 8-32 x 1/4
8	1	0110402	Soc Set Screw 10-32 x 1
9	2	0110635	Fil Hd Screw 2-56 x 3/16
10	9	0110991	Soc Bt Hd Scr 8-32 x 3/8 (2 shown)
11	6	0111076	Soc Cap Screw 5-40 x 3/8 (2 shown)
12	2	0112141	Soc Set Screw 8-32 x 3/8
13	2	0121066	Knurl Screw
14	1	0130014	Shoulder Screw
15	2	0130770	Shoulder Screw
16	6	0150006	Hex Nut 10-32
17	10	0150014	Hex Nut 8-32 (2 shown)
18	1	0150040	Hex Nut 2-56
19	4	0160508	Groov-Pin
20	2	0170014	Flat Washer #10
21	3	0170019	Everlock Washer #10
22	5	0170021	Flat Washer #8
23	9	0170036	Everlock Washer #8 (2 shown)
24	2	0170086	Everlock Washer #5 (1 shown)
25	1	0170383	Flat Washer #2
26	1	0171130	Everlock Washer #2
27	1	0172866	Spacer 1/4-3/8-5/8
28	2	0180043	Bushing (Cat. only)
29	2	0180224	Bushing (Cat. only)
30	1	0180743	Bushing (Cat. only)
31	4	0190799	Compression Spring
32	2	0191297	Compression Spring
33	1	0191301	Extension Spring
34	2	0210002	Ball Bearing 1/4
35	2	0210914	Ball Bushing 3/8
36	6	0280045	Recessed Bumper (2 shown)
37	1	0285062	Connecting Link
38	1	0285063	Drive Link
39	2	0381371	Master Plate Clamp
40	1	0471272	Sprocket 20 Teeth
41	1	0471273	Sprocket 20 Teeth
42	1	0480597	Chain
43	1	0681844	Hole Plug
44	2	0720109	Cam Follower
45	2	0721040	Cam Follower
46	1	0945335	Latch Rod
47	1	0945336	Way Shaft
48	1	0945337	Idler Shaft
49	1	0954214	Side Cover
50	1	0954215	Cover Hinge
51	1	0954217	Machine Cover
52	1	0954348	Bottom Guard
53	1	0954427	Left Front Guard
54	1	0954843	Master Plate/Work Table Guard
55	4	0990046	Retain. Ring 5/8
56	1	0990051	Grip-Ring 3/16
57	4	0990114	Retain. Ring 3/32
58	1	1109405	Ink Roll Track
59	1	1210683	Chain Tie Bracket
60	1	1210684	Latch Plate
61	1	1210685	Carriage Guide Plate (from Wiring Harness)
62	1	1213160	Offset Roll Carriage
63	1	1213254	Type Plate
64	1	1213255	Type Sub Plate
65	1	1213498	Main Frame
66	1	1213757	Cover Reinforcement Bar

WHEN ORDERING PARTS always include machine serial number, (7) digit part number, quantity needed, and part description. IMPORTANT: this page may be an option not included with your machine.	TITLE **INKING**	**0825237**

MODEL U-1355
527



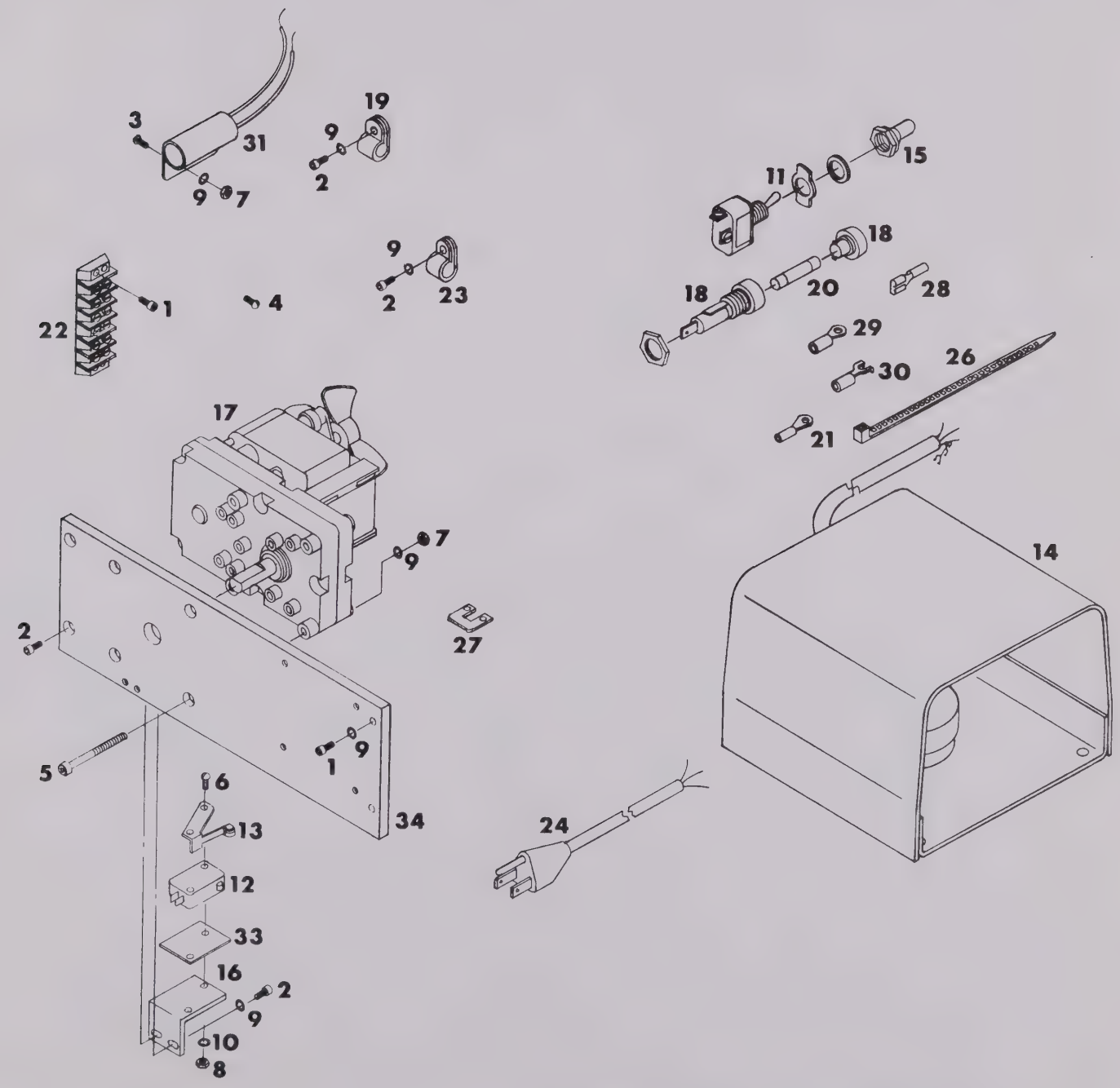
PARTS LIST ON BACK SIDE

Call No.	Qty.	Part No.	Description
1	2	0110028	Soc Set Screw 8-32 x 3/16
2	1	0110171	Soc Set Screw 5-40 x 1/8
3	1	0120901	Wing Nut 1/4-28
4	1	0121065	Adjust. Screw 1/4-28 x 1-11/16
5	1	0121102	Ink Roll Handle
6	1	0150014	Hex Nut 8-32
7	1	0160913	Dowel Pin
8	1	0170033	Shim .010 x 1/4 x 3/8
9	1	0170034	Shim .005 x 1/4 x 3/8
10	1	0170793	Flat Washer 13/64-3/8-1/32
11	1	0171358	Nylon Washer 265-9/16-030
12	1	0171642	Lockwasher #8 Split
13	2	0180043	Oilite Bushing 1/4-3/8-1/4
14	1	0180043	Oilite Bushing (Cat. only)
15	1	0180462	Oilite Bushing (Cat. only)
16	1	0190080	Extension Spring
17	1	0191301	Extension Spring
18	1	0191303	Extension Spring
19	1	0191316	Compress. Spring
20	4	0210002	Radial Bearing 1/4-5/8-196
21	2	0210187	Radial Bearing 1/8-3/8-109
22	2	0210654	Thrust Bearing 252-677
23	4	0210655	Thrust Bearing 252-677-030
24	1	0220759	Idler Pulley
25	2	0220793	Pulley
26	1	0500161	Collar 1/8
27	4	0500400	Collar 1/4
28	1	0630343	Timing Belt 1/4 71 Grooves
29	1	0651166	Ink Roll
30	1	0774182	Offset Roll
31	1	0945583	Idler Shaft
32	1	0945761	Ink Arm Rod
33	1	0945763	Offset Roll Shaft
34	1	0945765	Offset Roll Drive Shaft
35	1	0990033	Ret. Ring 1/4
36	1	0990079	Ret. Ring 3/16
37	1	0990144	Ret. Ring 1/8
38	1	1109406	Ink Arm Spacer
39	1	1110571	Ink Plate
40	1	1110572	Ink Plate Ratchet
41	1	1210691	O.S. Roll Frame
42	1	1211764	Ink Arm-Left
43	1	1211765	Ink Arm-Right

7-9-85

ORDERING PARTS	TITLE	P NUMBER
When ordering parts for this machine include: machine serial number, P number, quantity needed, 7 digit part number, and the part description.	**ELECTRICAL** **115V/50-60 Hz/1 Ph**	**0825238**

MODEL 527



PARTS LIST ON BACK SIDE

Call No.	Qty.	Part No.	Description
1	4	0110054	Soc Cap Screw 8-32 x 1/2 (2 shown)
2	6	0110055	Soc Cap Screw 8-32 x 3/8 (4 shown)
3	2	0110155	Soc Bt Hd Scr 8-32 x 3/8 (1 shown)
4	1	0110354	Rd Hd Screw 8-32 x 1/2 Brass
5	4	0111586	Soc Cap Screw 8-32 x 1-3/4 (1 shown)
6	2	0111864	Rd Hd Screw 2-56 x 1/2 (*) (1 shown)
7	6	0150014	Hex Nut 8-32 (2 shown)
8	2	0150040	Hex Nut 2-56 (*) (1 shown)
9	12	0170036	Everlock Washer #8 (6 shown)
10	2	0171130	Everlock Washer #2 (*)(1 shown)
11	1	0240002	Switch (*)
12	1	0240313	Limit Switch (*)
13	1	0240564	Switch Actuator (*)
14	1	0240604	Foot Switch (*)
15	1	0240726	Switch Boot
16	1	0241214	Switch Bracket (*)
17	1	0250698	Motor
18	1	0680021	Fuse Holder
19	1	0680225	Wire Clip (*)
20	1	0680430	Fuse 1.5 Amp.
21	2	0680499	Ring Tongue Term. Fitting (1 shown)
21	6	0680499	Ring Tongue Term. Fitting (*) (1 shown above)
22	1	0680585	Terminal Board (*)
23	2	0680847	Wire Clamp (*) (1 shown)
24	1	0681165	Line Cord (*)
25	3.6'	0681170	Black Wire 20Ga. (*) (not shown)
26	10	0681986	Wire Tie (*) (1 shown)
27	2	0682229	T.B. Jumper (*) (1 shown)
28	4	0682281	Slip-On Term. Fit. (*) (1 shown)
29	4	0682282	Ring Tongue Term. Fit. (*) (1 shown)
30	2	0682284	Spade Tongue Term. Fit. (*) (1 shown)
31	1	0683982	Mercury Switch
32	1	0684440	Wiring Harness (not shown assem.)
33	1	0684876	Insulator (*)
34	1	1210685	Carriage Guide Plate

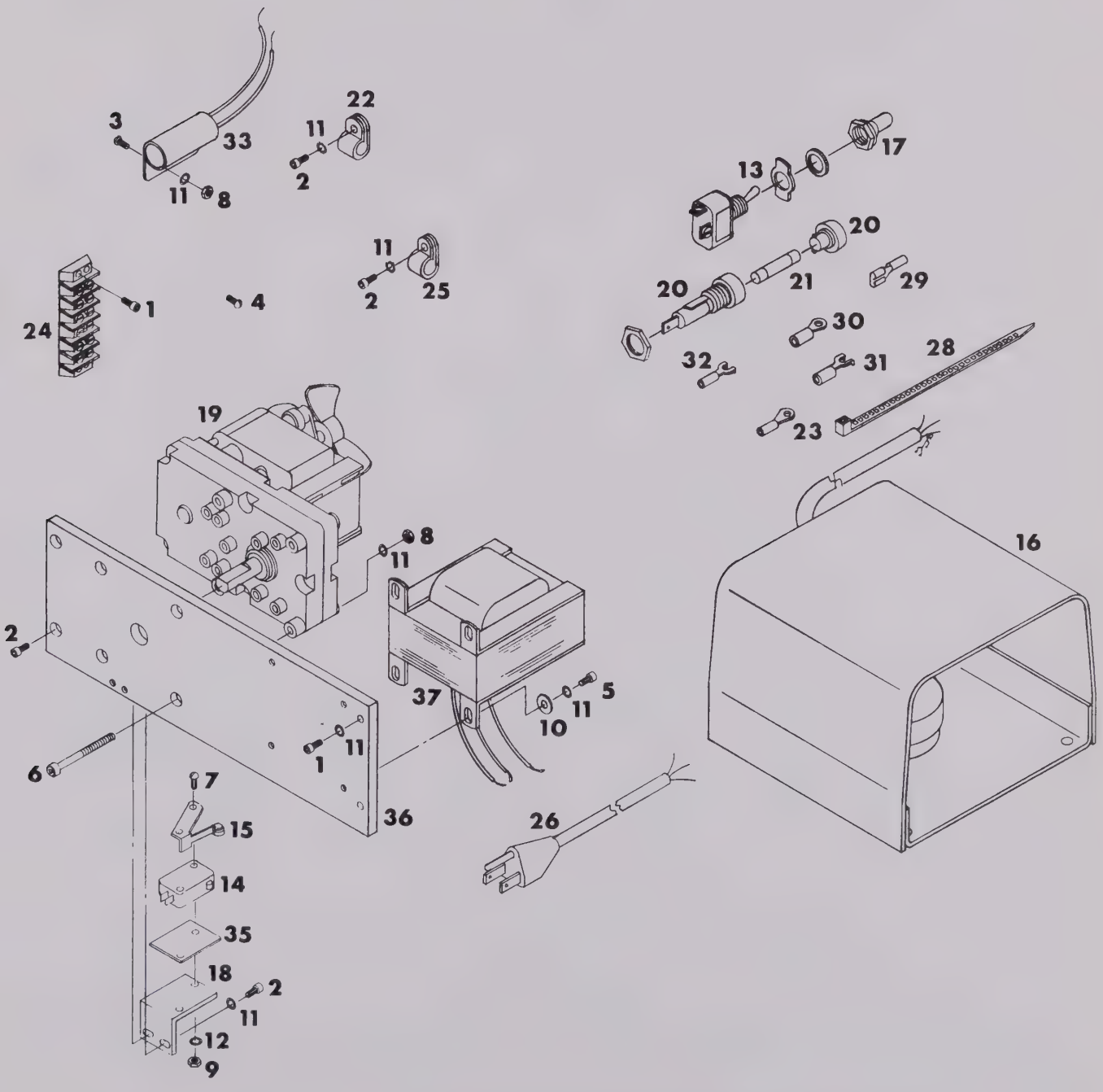
NOTE

Parts marked (*) make up Wiring Harness 0684440

4-25-84

ORDERING PARTS	TITLE	P NUMBER
When ordering parts for this machine include: machine serial number, P number, quantity needed, 7 digit part number, and the part description.	**ELECTRICAL 230V/50-60 Hz/1 Ph**	**0825239**

MODEL 527



PARTS LIST ON BACK SIDE

Call No.	Qty.	Part No.	Description
1	4	0110054	Soc Cap Screw 8-32 x 1/2 (2 shown)
2	6	0110055	Soc Cap Screw 8-32 x 3/8 (4 shown)
3	2	0110155	Soc Bt Hd Scr 8-32 x 3/8 (1 shown)
4	1	0110354	Rd Hd Screw 8-32 x 1/2 Brass
5	4	0110777	Soc Cap Screw 8-32 x 1/4 (1 shown)
6	4	0111586	Soc Cap Screw 8-32 x 1-3/4 (1 shown)
7	2	0111864	Rd Hd Screw 2-56 x 1/2 (*) (1 shown)
8	6	0150014	Hex Nut 8-32 (2 shown)
9	2	0150040	Hex Nut 2-56 (*) (1 shown)
10	4	0170021	Flat Washer #8 (1 shown)
11	16	0170036	Everlock Washer #8 (7 shown)
12	2	0171130	Everlock Washer #2 (*) (1 shown)
13	1	0240002	Switch (*)
14	1	0240313	Limit Switch (*)
15	1	0240564	Switch Actuator (*)
16	1	0240604	Foot Switch (*)
17	1	0240726	Toggle Switch Boot
18	1	0241214	Switch Bracket (*)
19	1	0250698	Motor
20	1	0680021	Fuse Holder
21	1	0680034	Fuse 1 Amp.
22	1	0680225	Wire Clamp (*)
23	3	0680499	Ring Tongue Term. Fitting (1 shown)
23	5	0680499	Ring Tongue Term. Fitting (*) (1 shown above)
24	1	0680585	Terminal Board (*)
25	2	0680847	Wire Clamp (*) (1 shown)
26	1	0681165	Line Cord (*)
27	3.6'	0681170	Black Wire 20Ga. (*) (not shown)
28	10	0681986	Wire Tie (*) (1 shown)
29	4	0682281	Slip-On Term. Fit. (*) (1 shown)
30	5	0682282	Ring Tongue Term. Fitting (*)(1 shown)
31	1	0682284	Spade Tongue Term. Fitting (*)
32	2	0682360	Spade Tongue Term. Fitting (1 shown)
33	1	0683982	Mercury Switch
34	1	0684439	Wiring Harness (not shown assem.)
35	1	0684876	Insulator (*)
36	1	1210685	Carriage Guide Plate
37	1	2150006	Transformer

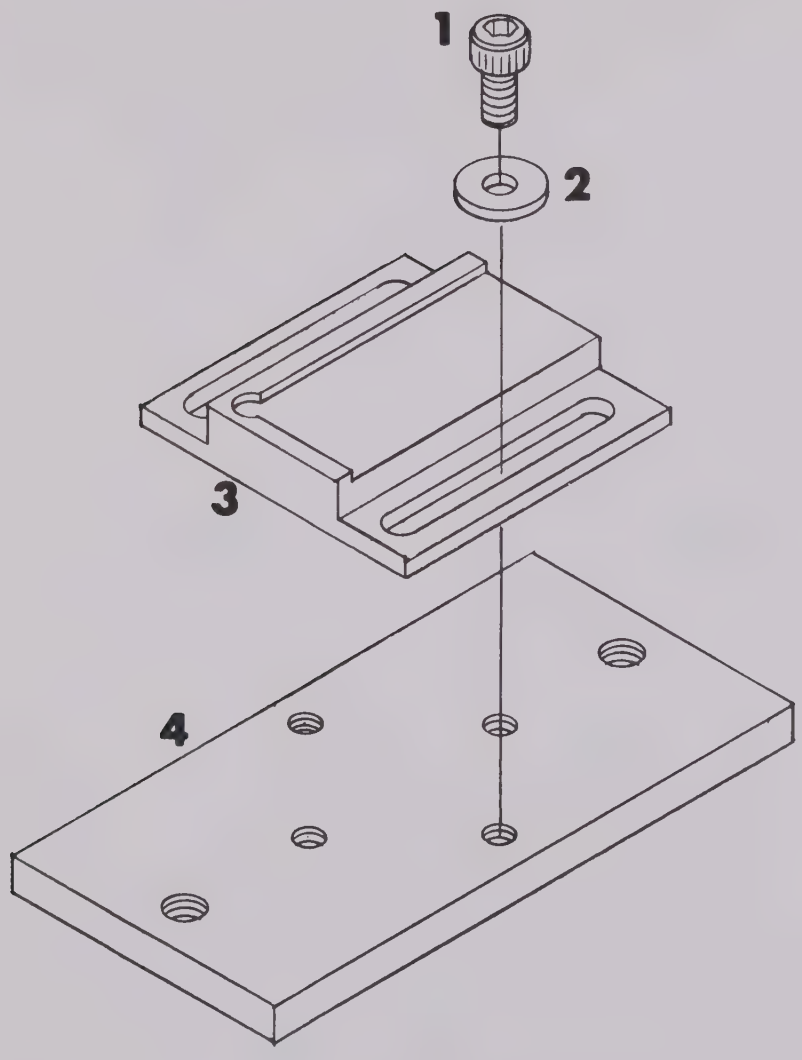
NOTE

Parts marked (*) make up Wiring Harness 0684439

4-16-84

ORDERING PARTS	TITLE	P NUMBER
When ordering parts for this machine include: machine serial number, P number, quantity needed, 7 digit part number, and the part description.	**FLAT PART WORK FIXTURE**	**0825301**

MODEL 527/528

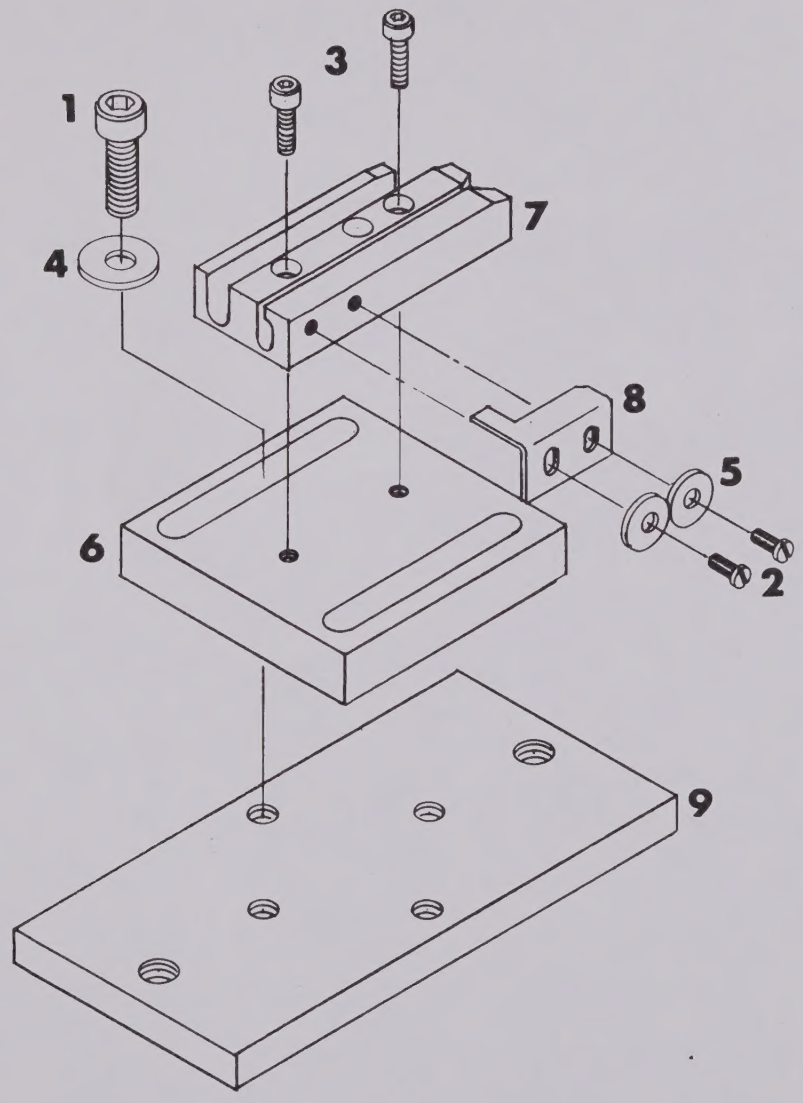


Call No.	Qty.	Part No.	Description
1	2	0110062	Soc Cap Screw 10-32 x 3/8 (1 shown)
2	2	0170014	Flat Washer #10 (1 shown)
3	1	0326971	Flat Part Work Fixture
4	1	1213560	Special Work Table

4-17-84

ORDERING PARTS	TITLE	P NUMBER
When ordering parts for this machine include: machine serial number, P number, quantity needed, 7 digit part number, and the part description.	**DIP WORK FIXTURE**	**0825302**

MODEL 527/528



Call No.	Qty.	Part No.	Description
1	2	0110052	Soc Cap Screw 10-32 x 5/8 (1 shown)
2	2	0110174	Bind Hd Screw 4-40 x 3/16
3	2	0111992	Soc Cap Screw 4-40 x 3/8
4	2	0170014	Flat Washer #10 (1 shown)
5	2	0170320	Flat Washer #4
6	1	0326974	DIP Fixture Base
7	1	0881663	Work Fixture
8	1	1008590	Stripper
9	1	1213560	Special Work Table

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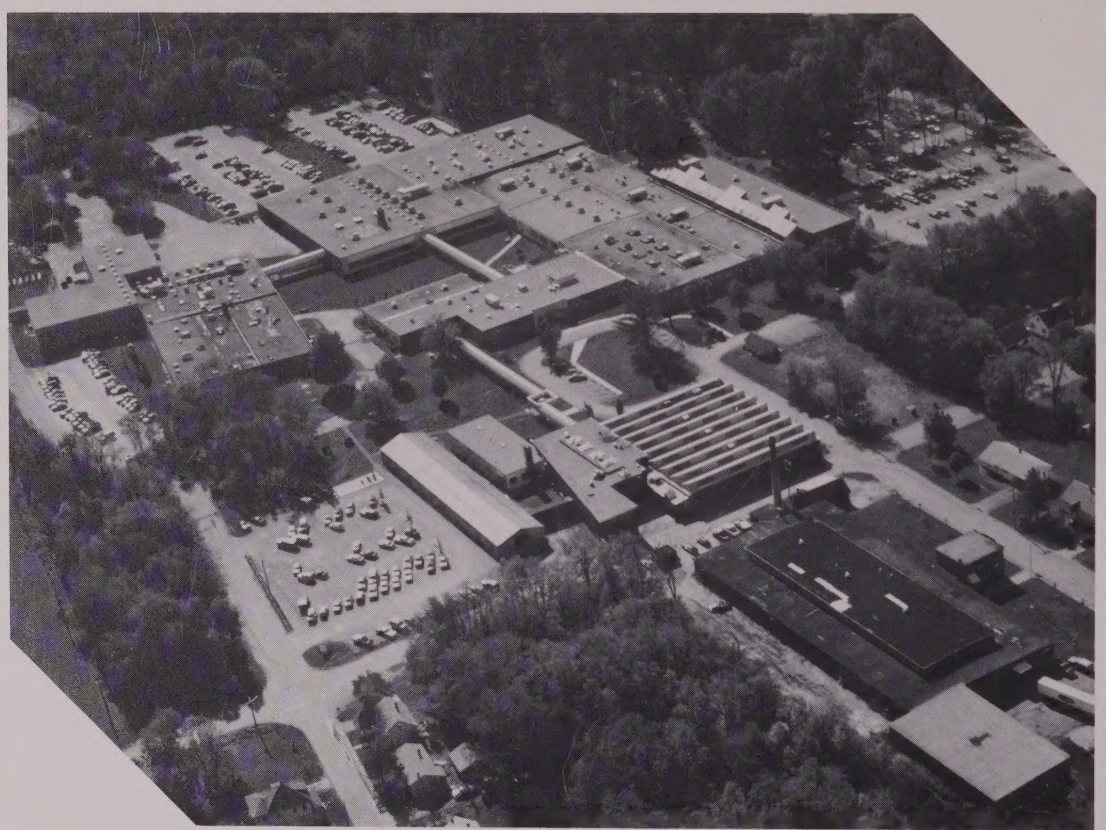
machine manual



Corporate Headquarters - Keene, New Hampshire

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